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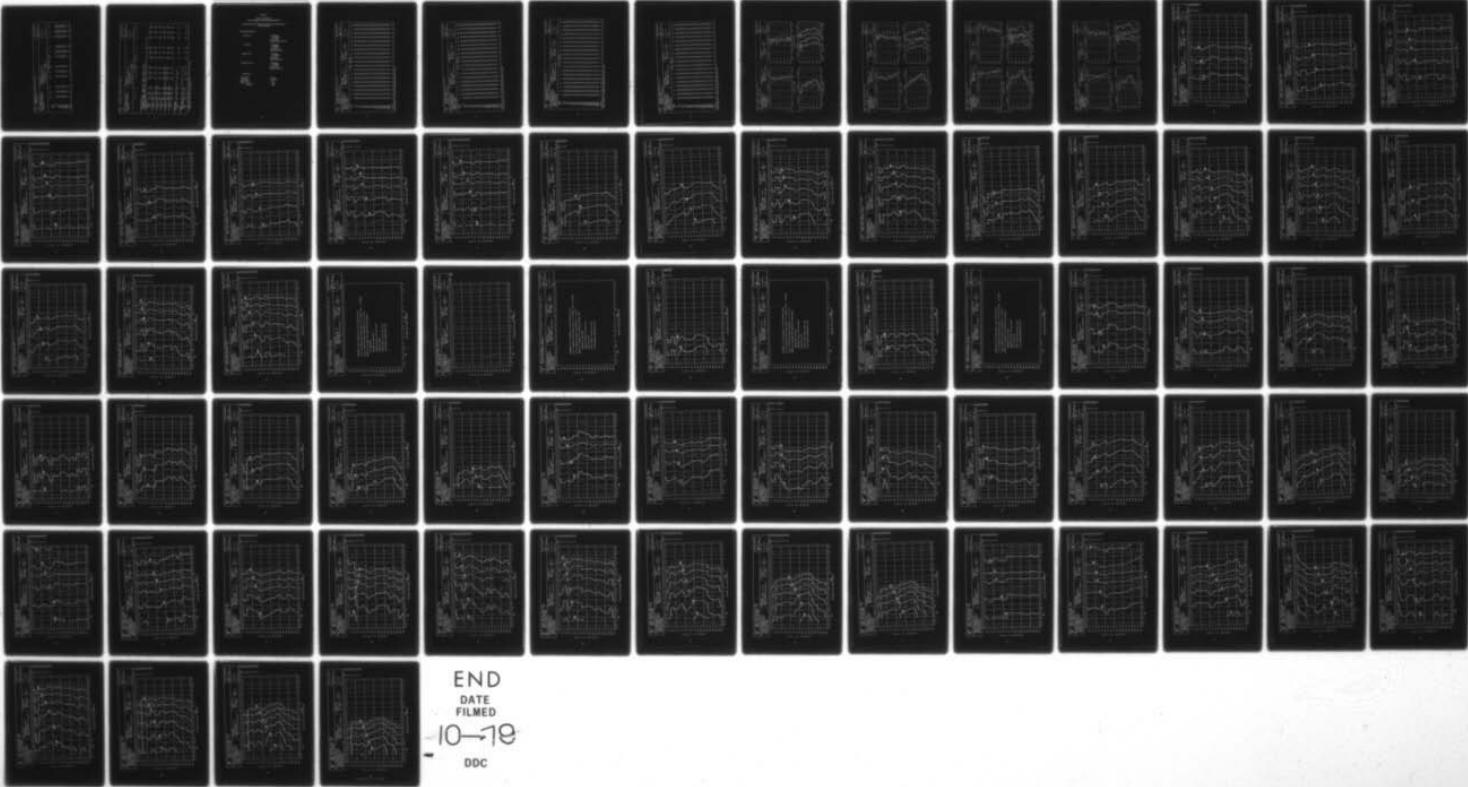
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OH F/G 20/1  
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 129. F-100 AI--ETC(U)  
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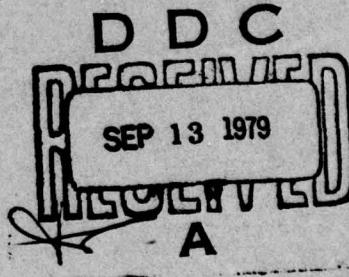


## USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 129

F-100 Aircraft in the AF32A-16 Noise Suppressor,  
Near and Far-Field Noise

NOVEMBER 1978  
A053714



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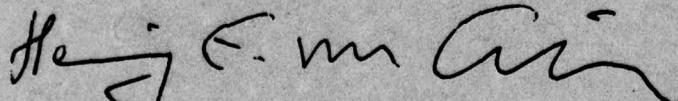
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HENNING E. VON GIERKE  
Director  
Biodynamics and Bioengineering Division  
Aerospace Medical Research Laboratory

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AMRL-TR-75-50, Vol - 129	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK F-100 Aircraft In The AF32A-16 Noise Suppressor, Near And Far-Field Noise.	5. TYPE OF REPORT & PERIOD COVERED Volume 129 of a series	
7. AUTHOR(s) Robert A. Lee	6. PERFORMING ORG. REPORT NUMBER 9. CONTRACT OR GRANT NUMBER(s) Technical rep't	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Aerospace Medical Research Laboratory Aerospace Medical Division, Air Force Systems Command, Wright-Patterson AFB OH	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 16 12 62202F 7231-07-05	
11. CONTROLLING OFFICE NAME AND ADDRESS Same as above	12. REPORT DATE November 1978	
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	13. NUMBER OF PAGES 86	
15. SECURITY CLASS. (of this report) Unclassified		
15a. DECLASSIFICATION/DOWNGRADING SCHEDULE		
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Noise Suppressor Noise Environments Bioenvironmental Noise Aircraft F-100 Aircraft an F-100 in a noise		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The AF32A-16 noise suppressor is made by the E.C. DeYoung Company for acoustical suppression of the F-100 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for four engine power configurations. Near-field data are reported for three locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and		

A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application", AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

## PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723107, Technology to Define and Assess Environmental Quality of Noise From Air Force Operations.

The author gratefully acknowledges Mr. John Cole, and Mr. Robert Powell for their assistance in preparing this report, Mr. Jerry Speakman and Capt. Richard Gorman for their assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. Fred Lampley of the University of Dayton for assistance in the mechanics of data processing, and Mrs. Peggy Massie for assistance in typing this report.

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## INTRODUCTION

The F-100D aircraft is a fighter aircraft with mission requirements of the destruction of hostile aircraft in flight and hostile ground installations. This aircraft is powered by one Pratt and Whitney J57-P-21 engine, manufactured by North American and code named Super Sabre. The AF32A-16 noise suppressor was built by the E.C. DeYoung Company to provide noise level reduction for all F-100 aircraft during ground runup operations. This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft in this suppressor system during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the F-100 aircraft operating in the AF32A-16 noise suppressor.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type noise data in the handbook describe the noise produced during *ground operations* of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15°C temperature, 70% rel humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. *Refer to Volumes 1 and 2* (references 1 and 2) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

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1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.
2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise*, AMRL-TR-75-50 (2), AMRL, WPAFB, OH, 1975.

## NEAR-FIELD NOISE

### MEASUREMENTS

AMRL acquired near-field noise data on the AF32A-16 noise suppressor system during ground runup operations of the F-100 aircraft. For these tests the aircraft was located in the AF32A-16 noise suppressor at Toledo ANG with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the four engine power conditions. The ground-crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all the noise samples on magnetic tape. During analysis of each sample, he determined the one-third octave band root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shows the three near-field locations where ground crew are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations are difficult in the near-field since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

### RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the F-100 aircraft in the AF32A-16 noise suppressor at the three ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

**TABLE 1**  
**MEASUREMENT LOCATIONS AND TEST CONDITIONS**  
**FOR NEAR-FIELD NOISE MEASUREMENTS**

**F-100 Suppressor, Ground Runup, Toledo ANG, 19 Jul 1977,  
 Test #77-730-005**

***Ground Crew Location***

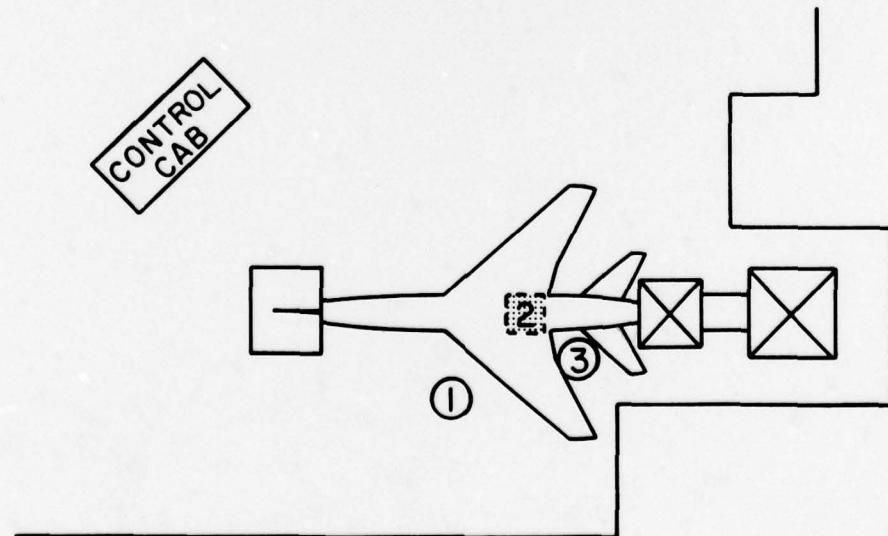
1	Trim Position
2	Leak Check Position
3	A/B Leak Check Position

***Aircraft Engine Operation***

A	Idle Power (53% RPM)
B	70% RPM
C	Takeoff Power (97% RPM)
D	Afterburner Power

***Meteorology***

Temperature	30 C
Bar Pressure	0.742 M Hg
Relative Humidity	67 %
Wind — Speed	Calm
— Direction	Calm



**Figure 1. Near-Field Measurement Locations**

## FAR-FIELD NOISE

### MEASUREMENTS

AMRL acquired the *near* and *far-field* data during a 1-2-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the aircraft in the suppressor and its orientation relative to 19 microphone measurement sites on a semicircle. The center of the 100 meter radius semicircle used in surveying the AF32A-16 noise suppressor was on the ground directly below the center of the exhaust stack.

Table 4 provides cockpit readouts of engine characteristics (% RPM, fuel flow, etc.) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All 19 microphone measurement sites are in the acoustic far-field of the source where the sound wave-fronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand held pole, pointed at the source (0° angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. These samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone.

### RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15 C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the F-100 aircraft operating in the AF32A-16 noise suppressor in a standard format.

Estimates of the noise levels for intermediate power settings (e.g., 90% RPM) and/or different number of engines operating (e.g., single engine) can be determined as explained in Volume 1 of this handbook.

Figures 4 through 10 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low.

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

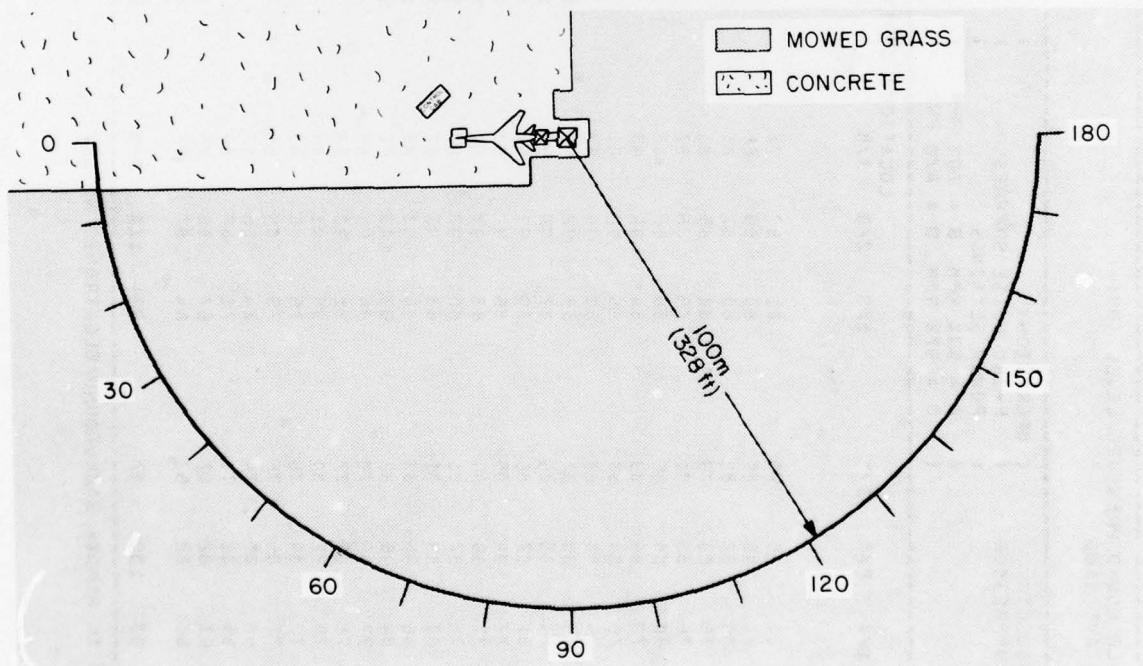


Figure 2. Far-Field Measurement Locations at Toledo ANG, OH

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)  
2 1/3 OCTAVE BAND

NOISE SOURCE/SUBJECT:		OPERATION:			LOCATION/CONDITION			IDENTIFICATION:		
F-100 NOISE SUPPRESSOR		F-100 NOISE SUPPRESSOR			TEST 77-737-005			OMEGA 3.02		
AF32A-16		POWER SETTINGS			RUN 01			TEST 77-737-005		
		A = 53% RPM B = 70% RPM			27 SEP 78			27 SEP 78		
		C = 97% RPM D = A/B PWR			PAGE F1			PAGE F1		
FREQ (HZ)		1/8	2/A	3/A	1/8	2/B	3/B	1/C	2/C	3/C
25	81	85	78	81	87	78	81	95	100	92
31.5	81	86	80	80	89	81	85	95	102	94
40	79	82	82	80	87	85	83	91	100	93
50	76	80	79	80	85	83	84	94	100	96
63	76	83	81	79	86	87	86	92	100	99
80	80	86	86	80	88	87	88	90	100	99
100	79	89	89	84	95	93	90	102	102	95
125	75	84	83	85	92	91	94	104	104	94
160	75	83	83	80	90	89	92	95	107	105
200	79	86	87	85	92	92	92	110	107	109
250	79	85	86	87	90	92	104	110	114	114
315	81	87	86	89	92	94	92	110	116	119
400	77	84	85	86	92	93	93	112	120	113
500	77	86	84	83	93	91	91	106	112	115
630	76	87	81	80	93	87	87	102	114	111
800	80	89	81	83	93	87	87	104	115	112
1000	86	96	83	64	93	85	85	105	113	110
1250	84	95	82	93	109	92	101	109	107	117
1600	77	89	79	84	95	85	99	106	105	115
2000	76	87	77	81	90	83	97	104	104	116
2500	79	87	80	85	91	84	98	106	105	109
3150	72	84	76	76	86	83	93	101	101	109
4000	72	84	76	79	89	86	89	100	100	94
5000	68	81	74	74	86	82	87	101	98	92
6300	65	81	71	71	88	84	85	103	96	91
8000	61	82	67	67	86	75	81	101	91	87
10000	60	82	63	64	87	73	76	101	98	84
OVERALL	93	102	97	98	110	103	117	124	125	119
										126 128

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE 1 MEASURED SOUND PRESSURE LEVEL (DB)  
2 OCTAVE BAND

		IDENTIFICATION					
		TEST 77-730-005					
		RUN 01					
		27 SEP 78					
		PAGE J1					
NOISE SOURCE/SUBJECT:		LOCATION/CONDITION					
F-100 NOISE SUPPRESSOR		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
AF 32A-16		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
OPERATION:		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
F-100 NOISE SUPPRESSOR		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
POWER SETTINGS		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
A = 53% RPM B = 70% RPM		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
C = 97% RPM D = A/B PWR		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
FREQ (HZ)		1/0 2/0 3/0 1/8 2/8 3/8 1/C 2/C 3/C					
31.5		85 89 85 85 92 87 99 105 98					
63		82 90 86 84 91 91 97 105 103					
125		82 91 90 88 97 96 98 109 109					
250		84 91 91 92 96 98 111 117 120					
500		81 90 88 89 97 96 113 121 121					
1000		89 99 87 93 109 94 108 115 115					
2000		82 93 84 88 97 89 103 110 109					
4000		75 88 80 82 92 89 95 105 105					
8000		67 86 73 73 91 82 87 106 97					
OVERALL		93 102 97 98 110 103 117 124 125					
		119 126 128					

TABLE I MEASURES OF HUMAN NOISE EXPOSURE

MEASURES OF HUMAN NOISE EXPOSURE										IDENTIFICATION:	
NOISE SOURCE/SUBJECT:										3	
F-100 NOISE SUPPRESSOR										) OMEGA 3 <sup>o</sup> 2	
AF32A-16										) PUN 01	
POWER SETTINGS										) TEST 77-730-005	
( A = 53% RPM B = 70% RPM										) 27 SEP 78	
( C = 97% RPM D = A/B PWR										) PAGE H1	
OPERATION:											
( F-100 NOISE SUPPRESSOR											
( POWER SETTINGS											
( A = 53% RPM B = 70% RPM											
( C = 97% RPM D = A/B PWR											
1/A 2/A 3/A 1/B 2/B 3/B LOCATION/CONDITION										1/D 2/D 3/D	
1/A 2/A 3/A 1/B 2/B 3/B LOCATION/CONDITION										1/D 2/D 3/D	
HAZARD/PROTECTION											
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR											
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR											
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)											
NO PROTECTION											
OASLC 92 102 96 98 110 103 116 124 125 119 126 128											
OASLA 96 101 92 96 110 99 113 121 121 117 125 125											
T 170 25 120 60 5 36 3.2 P P P P											
MINIMUM QPL EAR MUFFS											
OASLA* 67 76 73 73 83 79 93 100 101 101 95 101											
T 960 960 960 960 571 960 101 30 25 71 25 13											
AMERICAN OPTICAL 1700 EAR MUFFS											
OASLA* 62 71 69 68 77 74 87 95 96 89 95 99											
T 960 960 960 960 960 960 285 71 60 202 71 36											
V-51R EAR PLUGS											
OASLA* 66 75 68 71 84 75 90 99 98 94 101 103											
T 960 960 960 960 480 960 176 36 42 85 25 18											
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS											
OASLA* 53 63 54 57 72 60 75 83 82 79 87 96											
T 960 960 960 960 960 960 571 679 679 960 285 339											
H-133 GROUND COMMUNICATION UNIT											
OASLA* 64 74 65 69 83 71 84 93 91 88 96 95											
T 960 960 960 960 571 960 480 101 143 240 60 71											
COMMUNICATION PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)											
PSIL 84 94 86 90 101 93 108 116 115 112 119 120											
ANNOYANCE PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)											
TONE CORRECTION (C IN DB)											
PNLT 103 114 106 111 126 114 126 135 133 128 136 138											
C 2 1 3 5 2 1 1 1 1 0 1											

\*\* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.  
P ADDITIONAL EAR PROTECTION REQUIRED.

**TABLE 4**  
**TEST CONDITIONS**  
**FOR FAR-FIELD NOISE MEASUREMENTS**

**F-100 Aircraft In The AF32A-16 Noise Suppressor, Ground Runup**  
**Toledo ANG OH**

*Aircraft Engine Operation*

<b>Idle, Power</b>	<b>One Engine</b> <b>53 % RPM</b> <b>508 F EGT</b> <b>1000 LBS/HR, Fuel Flow</b>
<b>70% RPM</b>	<b>One Engine</b> <b>70 % RPM</b> <b>700 F EGT</b> <b>3000 LBS/HR, FF</b>
<b>Military Power</b>	<b>One Engine</b> <b>97 % RPM</b> <b>1132 F EGT</b> <b>8500 LBS/HR, FF</b>
<b>Afterburner Power</b>	<b>One Engine</b> <b>97 % RPM</b> <b>1158 F EGT</b> <b>33050 LBS/HR, FF</b>

*Meteorology*

<b>Temperature</b>	<b>30 C</b>
<b>Bar Pressure</b>	<b>0.742 M Hg</b>
<b>Rel Humidity</b>	<b>67 %</b>
<b>Wind -- Speed</b>	<b>Calm</b>
<b>          -- Direction</b>	<b>Calm</b>

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)

5 1/3 OCTAVE BAND

DISTANCE = 100 METERS

FREQ (HZ)	OPERATION:										IDENTIFICATION:																		
	IDLE POWER 53% RPM			SINGLE ENGINE			GROUND RUNUP (SUPPRESSED)			METEOROLOGY:			TEST 77-730-001			OMEGA 1.4		RUN 01											
NOISE SOURCE/SUBJECT:											TEMP = 30 C		BAR PRESS = 742 M HG		REL HUMID = 67 %		OMEGA 1.4		RUN 01										
F-10C AIRCRAFT IN THE AF32A-16 SUPPRESSOR ENGINE J57-P-21 FAR FIELD NOISE											TEMP = 30 C		BAR PRESS = 742 M HG		REL HUMID = 67 %		OMEGA 1.4		RUN 01										
											ANGLE (DEGREES)																		
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180										
25	69	70	67	67	65	68	66	66	66	65	65	67	66	67	67	66	66	66	66	65									
31.5	66	66	65	66	65	68	69	73	72	71	69	69	68	69	68	69	68	67	67	66									
46	66	65	61	60	60	64	66	68	67	64	64	64	64	65	67	67	67	67	67	66									
50	66	63	61	63	62	61	60	61	62	62	62	62	62	63	63	63	67	67	66	64									
63	66	66	62	63	64	64	63	63	63	63	65	65	68	67	66	65	66	67	67	63									
80	64	62	63	65	63	65	62	63	65	65	67	66	65	67	66	64	64	62	62	61									
100	60	61	63	65	65	63	65	68	69	66	65	63	64	64	64	63	62	62	64	57									
125	56	55	60	58	57	57	56	59	58	57	61	58	61	60	59	61	57	55	55	54									
160	54	54	59	57	54	55	53	55	53	54	55	55	56	55	56	55	57	55	52	51									
200	55	55	58	56	54	54	52	54	53	55	56	55	57	57	55	57	54	53	51	47									
250	55	53	58	55	53	55	50	53	50	54	53	55	53	57	55	57	57	53	51	51									
315	52	49	56	52	52	53	49	53	51	53	51	49	53	51	52	50	50	53	50	50									
400	54	47	54	49	53	51	47	51	48	49	48	47	49	47	47	50	49	49	55	52									
500	55	48	52	50	53	52	47	51	50	51	53	52	50	52	51	54	53	56	52										
630	50	45	52	50	52	49	53	53	53	55	56	55	53	58	53	58	55	53	52										
800	52	46	54	53	54	55	53	57	57	57	60	60	58	59	57	60	57	58	54										
1000	53	45	54	55	55	56	54	58	58	60	61	61	61	60	59	58	58	58	56										
1250	55	49	54	57	55	56	56	60	60	59	62	60	60	59	62	62	62	56	58										
1600	49	44	54	54	55	57	55	59	59	59	58	58	58	59	59	59	58	54	54										
2000	48	42	52	52	53	56	56	59	59	59	60	60	61	59	58	58	55	53											
2500	49	43	54	54	55	58	56	58	58	59	59	58	61	60	60	60	58	55	53										
3150	46	41	52	52	53	54	53	56	56	58	58	58	58	60	60	60	60	56	54										
4000	44	41	51	52	54	55	52	51	52	48	54	54	56	55	57	58	61	58	53										
5000	40	38	49	52	51	53	52	49	54	54	56	54	55	57	59	59	55	51	46										
6300	37	37	49	51	53	45	47	45	50	51	53	49	49	51	52	56	56	57	53										
8000	35	34	45	46	48	47	44	42	44	42	47	46	46	48	46	46	42	47	42										
10000	32	32	42	42	44	44	42	44	42	44	42	44	42	44	42	44	42	39	33										
OVERALL	74	74	73	74	73	75	75	77	77	76	76	75	76	75	76	75	75	75	73										

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)  
**5** 1/3 OCTAVE BAND  
 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT	OPERATION										METEOROLOGY									
	70% RPM ENG RUNUP					SINGLE ENGINE GROUND RUNUP (SUPPRESSED)					TEMP = 30 C BAR PRESS = 742 Hg REL HUMID = 67 %									
FREQ (HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
25	71	68	68	68	68	70	69	72	71	69	69	67	69	69	67	69	69	68	69	69
31.5	68	67	67	69	68	71	71	74	73	73	73	71	72	71	71	71	71	71	72	72
40	66	65	66	65	65	67	70	72	70	69	68	67	67	67	66	66	67	67	67	69
50	67	65	64	65	65	65	64	67	66	65	64	65	65	66	67	67	67	67	67	72
63	69	68	68	69	68	69	68	65	65	65	64	67	67	67	67	67	69	72	74	71
80	66	63	66	67	65	65	64	64	67	70	69	67	67	67	67	69	69	67	67	67
100	70	68	73	70	68	65	64	66	66	65	63	66	63	69	70	68	68	70	73	70
125	70	67	72	70	64	65	63	61	63	65	64	66	66	65	65	66	66	66	67	66
160	62	63	66	64	62	60	59	57	58	58	61	60	61	60	61	61	61	61	60	61
200	64	65	67	64	61	59	58	55	55	58	61	61	59	61	61	61	61	59	58	58
250	62	62	66	62	58	58	57	57	58	60	61	59	60	59	57	59	58	57	53	53
315	61	59	65	60	58	60	59	59	60	60	61	56	58	55	55	57	55	52	55	55
400	61	56	62	59	60	59	58	57	57	58	57	54	53	52	53	55	53	53	58	58
500	61	54	60	59	60	59	59	57	56	55	55	54	56	57	57	55	55	55	58	58
630	58	55	60	61	59	61	60	59	59	59	59	60	60	61	62	61	59	59	59	59
800	58	56	60	61	59	60	62	61	61	62	63	64	63	63	64	62	61	60	61	60
1000	57	56	60	60	61	61	62	62	63	64	66	66	65	66	66	64	62	59	59	59
1250	58	60	62	62	64	66	68	64	65	67	69	69	67	68	67	69	67	64	63	63
1600	55	58	60	63	63	62	63	62	64	67	69	69	68	66	67	68	62	62	59	59
2000	51	55	57	61	62	65	62	64	66	68	67	69	68	67	68	66	64	60	59	59
2500	55	56	55	62	62	64	66	63	65	67	69	67	63	69	70	66	63	62	62	62
3150	50	54	55	60	58	61	63	60	63	66	67	66	68	70	70	65	60	60	60	60
4000	54	58	60	62	61	62	62	63	65	67	68	69	67	68	72	71	66	62	62	62
5000	49	52	53	59	56	59	59	61	63	66	67	65	68	70	68	64	60	58	58	58
6300	46	53	52	58	56	57	59	60	62	65	65	66	64	65	66	65	61	57	56	56
8000	44	54	55	60	60	62	65	64	63	66	66	63	64	64	64	61	61	57	57	56
10300	40	50	51	57	56	59	61	56	63	60	63	64	64	64	61	61	57	54	53	53
OVERALL	78	77	80	79	78	78	79	79	80	81	81	80	81	81	82	81	81	81	80	80

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)  
5 1/3 OCTAVE BAND  
DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:		OPERATION:				METEOROLOGY:				TEST 77-730-001										
F-100 AIRCRAFT IN THE AF32A-16 SUPPRESSOR ENGINE J57-P-21 FAR FIELD NOISE		MILITARY POWER 97% RPM SINGLE ENGINE GROUND RUNUP (SUPPRESSED)				TEMP = 30 C BAR PRESS = .742 M HG REL HUMID = 67 %				RUN 03 14 SEP 78 PAGE 2										
FREQ (HZ)		0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	79	79	77	78	82	78	79	81	82	82	80	80	80	79	81	80	80	81	80	80
31.5	82	83	81	81	80	80	82	85	84	84	83	83	83	84	84	84	84	84	84	84
40	81	82	81	83	83	83	81	85	83	84	83	84	84	83	85	85	85	85	85	85
50	81	80	81	80	82	82	81	83	84	85	86	86	86	84	86	86	86	86	86	86
63	82	80	83	80	81	82	81	80	82	82	83	84	85	83	88	87	87	86	86	86
80	82	81	85	82	82	81	80	79	82	81	81	82	83	84	80	86	85	83	81	80
100	75	75	79	77	78	76	75	76	78	79	79	80	81	80	78	82	80	78	76	76
125	77	75	80	81	79	77	75	75	73	74	74	78	80	76	79	79	79	78	79	79
160	77	77	82	79	78	76	73	71	71	74	75	75	76	73	72	72	77	73	76	73
200	63	62	85	80	78	76	74	72	75	78	77	77	79	75	74	72	76	72	73	73
250	83	83	88	79	77	81	77	75	76	77	82	82	81	78	74	77	78	77	77	77
31.5	91	86	86	81	82	83	82	79	81	81	82	82	83	83	79	81	80	74	77	77
40	91	86	87	80	84	84	83	79	80	78	78	82	79	80	79	77	77	75	77	77
50	83	80	82	79	82	85	83	80	78	75	80	78	80	78	75	74	77	74	77	74
63	78	77	80	77	80	83	81	81	78	77	77	77	77	79	77	80	79	77	79	73
80	81	84	77	81	85	84	85	80	82	82	80	80	82	80	79	78	78	81	76	76
100	79	80	86	81	82	85	85	81	82	83	81	80	79	79	78	78	78	82	76	76
125	72	75	82	81	83	82	82	80	81	80	80	78	79	77	76	76	76	78	72	72
160	72	75	81	77	80	84	80	79	81	83	82	82	81	81	81	76	76	76	71	71
200	66	72	79	77	78	81	77	76	79	82	85	83	82	82	74	74	72	73	73	69
250	65	69	77	76	77	78	76	75	79	81	85	84	85	84	75	74	73	72	68	68
315	63	67	75	75	76	77	76	74	79	81	84	85	86	83	75	72	70	70	66	66
400	60	66	75	74	76	77	76	76	80	81	84	86	87	83	75	73	69	68	64	64
500	58	63	73	71	74	73	74	73	74	79	81	84	83	84	80	72	71	67	66	63
630	55	61	70	69	71	72	71	71	79	78	81	83	83	83	78	71	67	66	65	62
800	53	60	66	66	70	70	70	71	76	76	78	78	78	78	72	67	66	61	59	57
1000	48	54	63	62	66	67	66	66	72	73	73	74	74	74	67	62	62	56	55	52
OVERALL	96	94	97	93	94	95	94	93	94	95	96	96	96	96	93	95	94	94	93	93

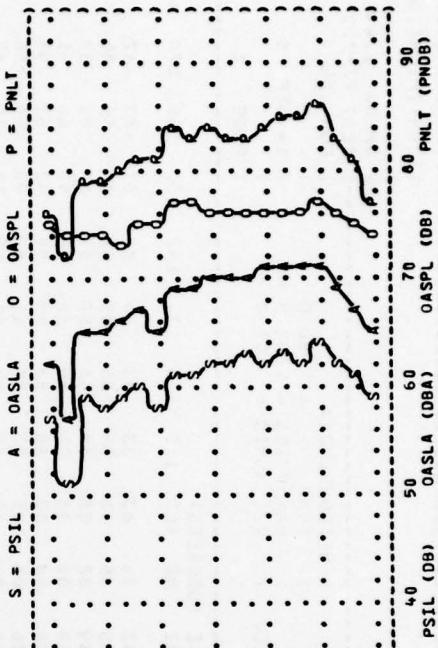
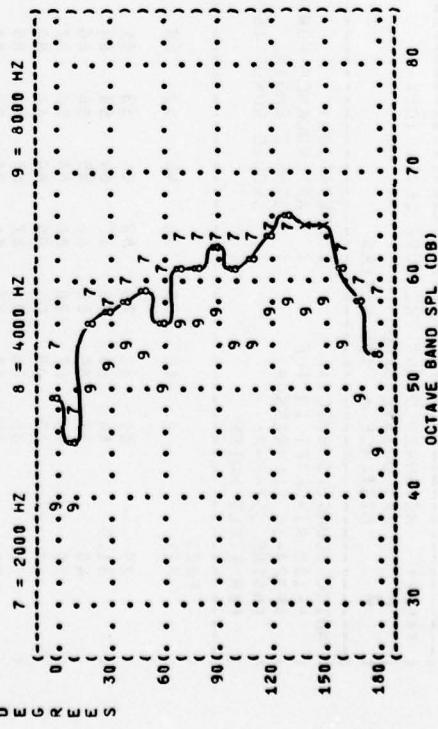
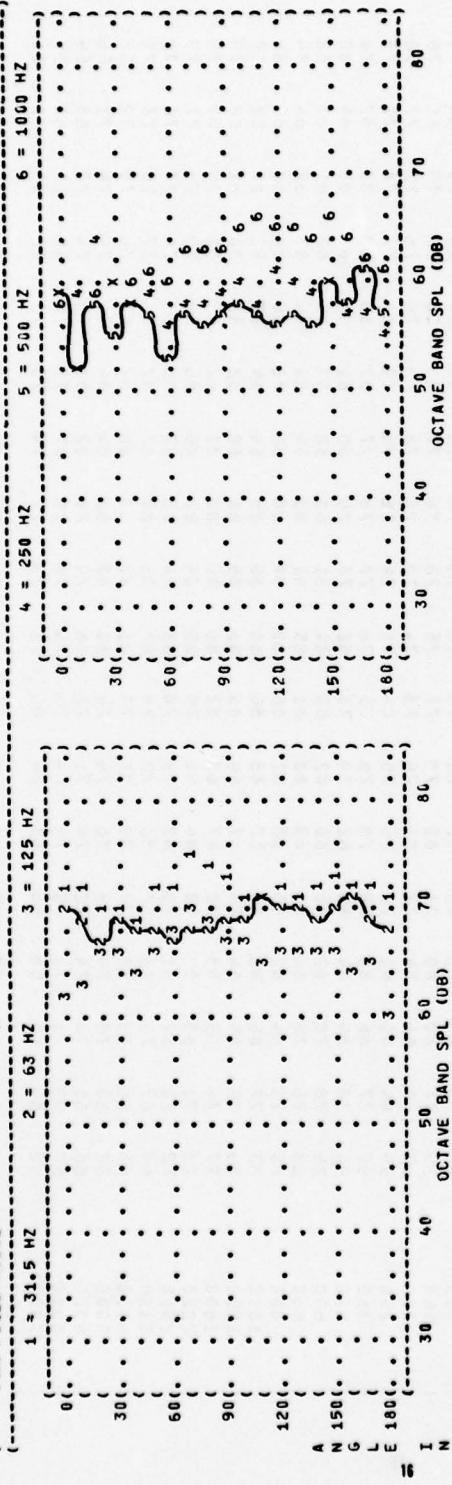
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.



FIGURE 4 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE



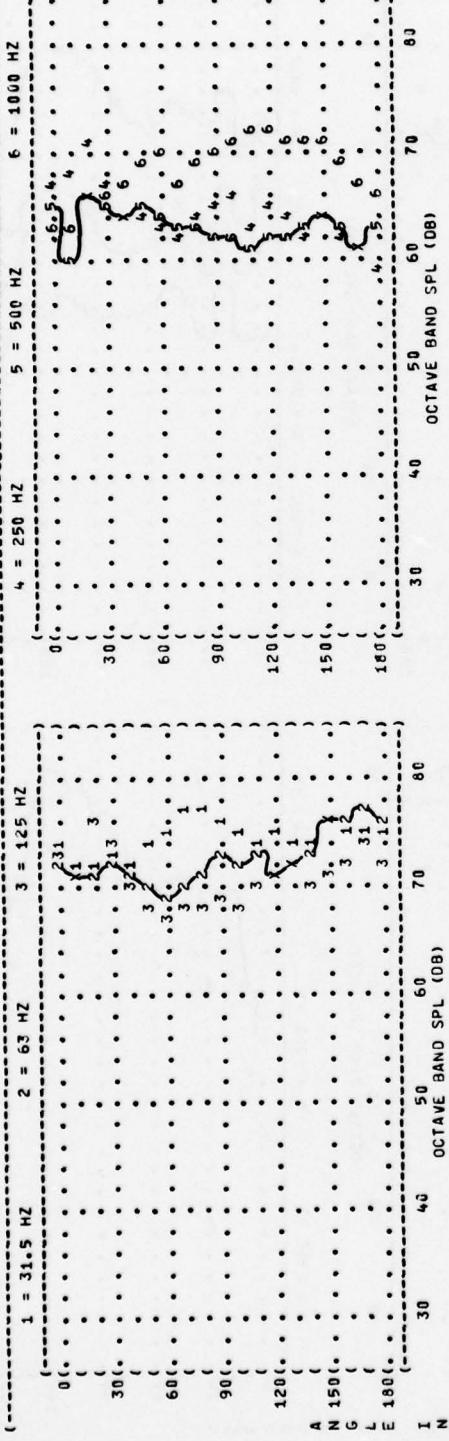
IDENTIFICATION:

OMEGA 1.4  
TEST 77-730-001  
RUN 01  
METEOROLOGY:  
TEMP = 15 C  
BAR PRESS = 160 M HG  
REL HUMID = 70 %  
PAGE 6

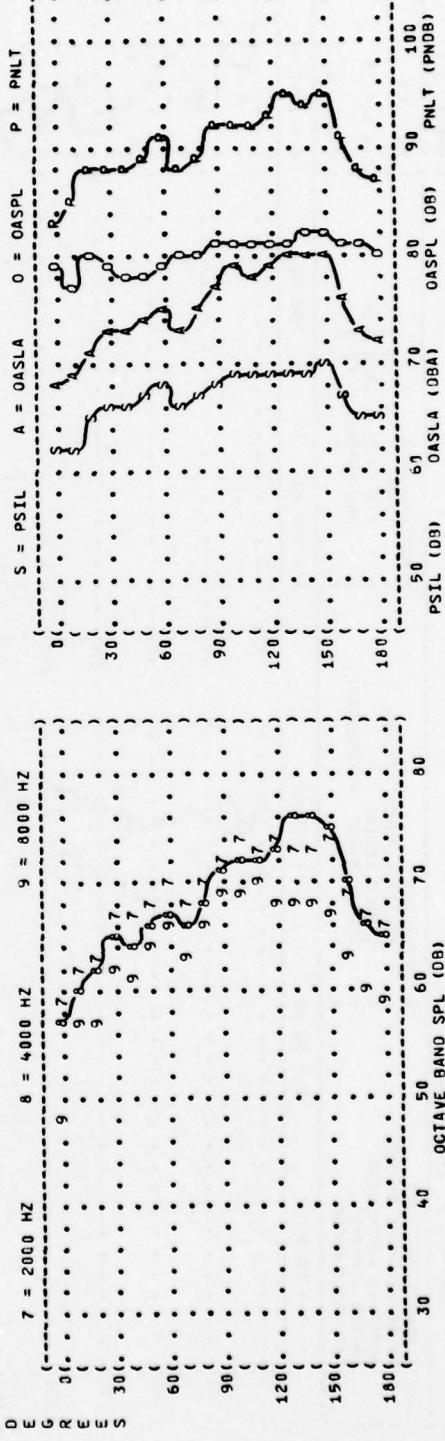
FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

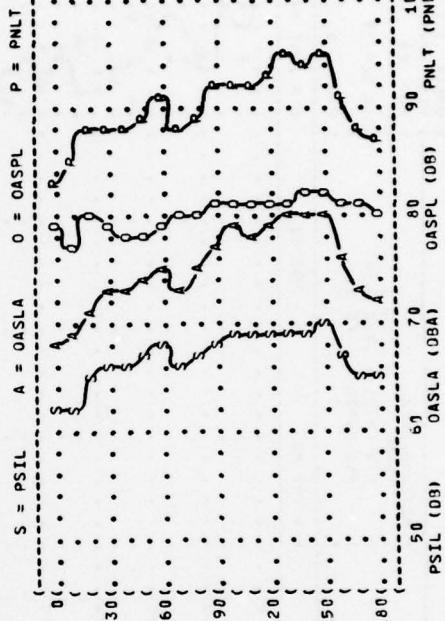
NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE



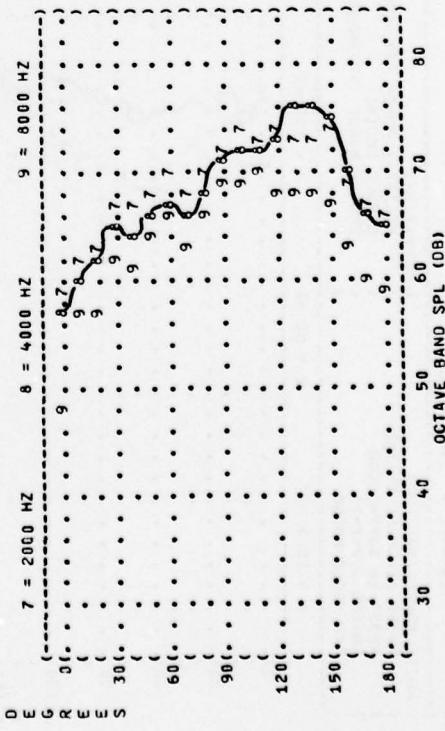
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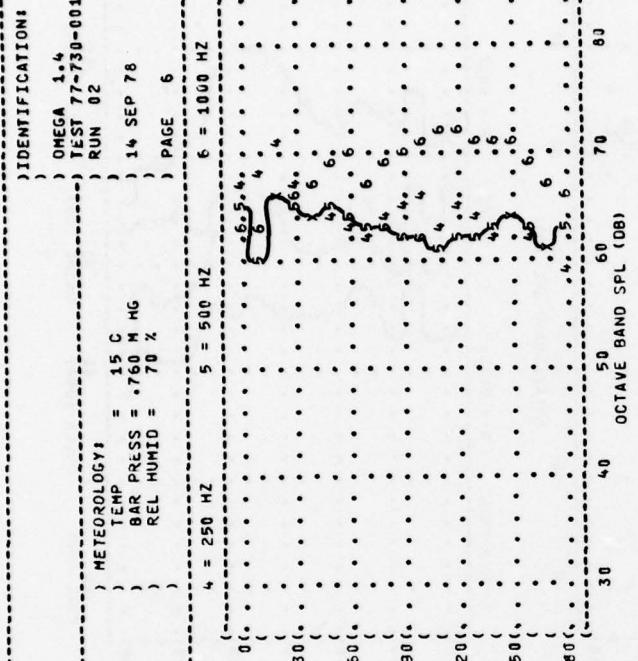
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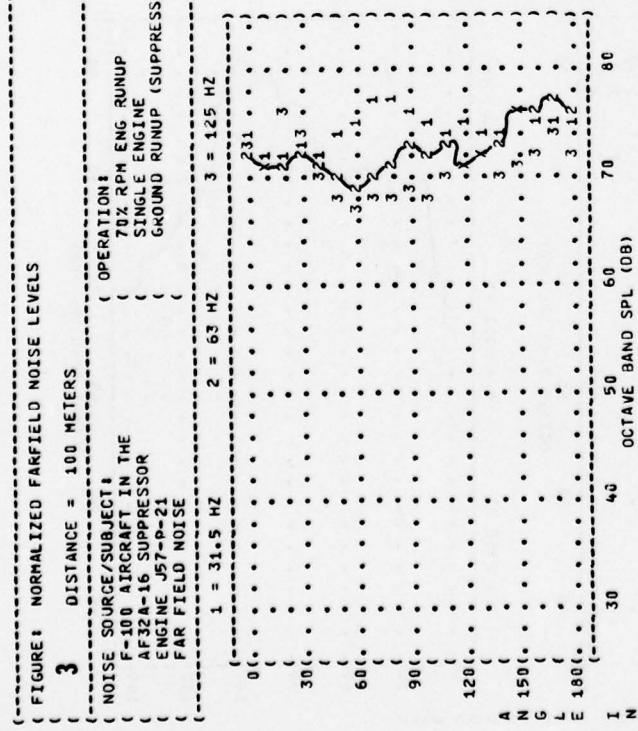
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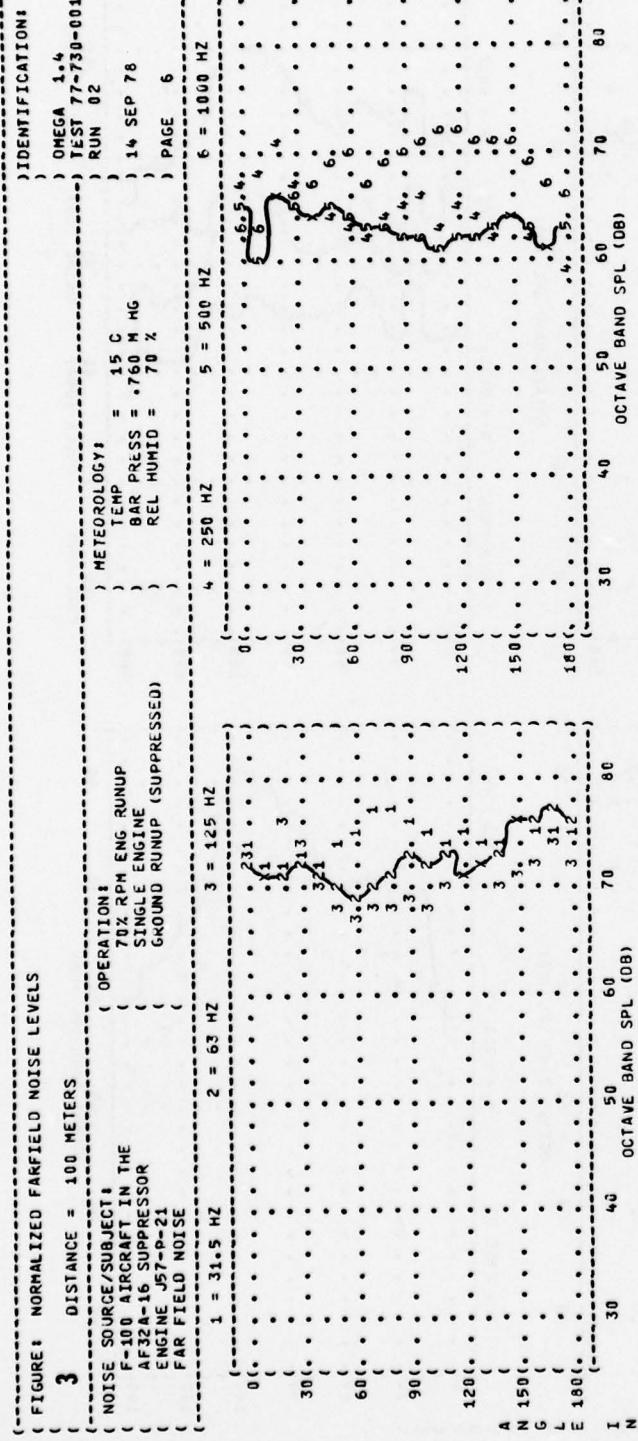
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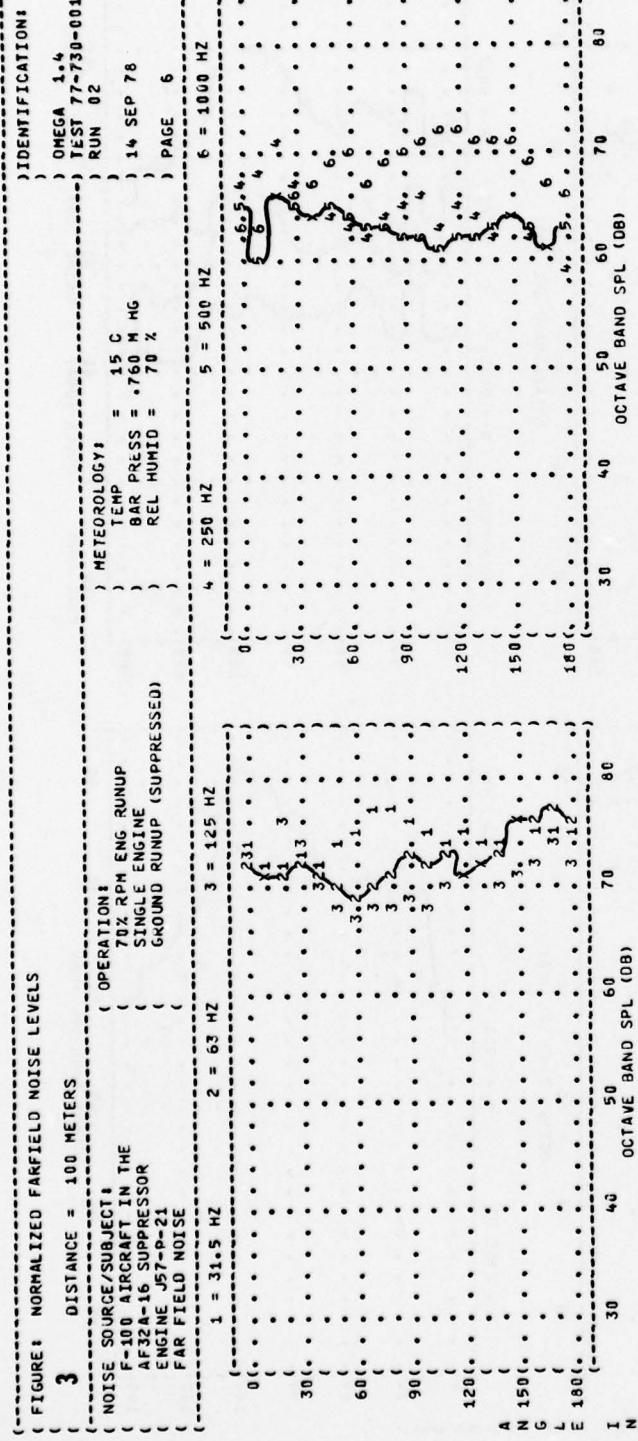
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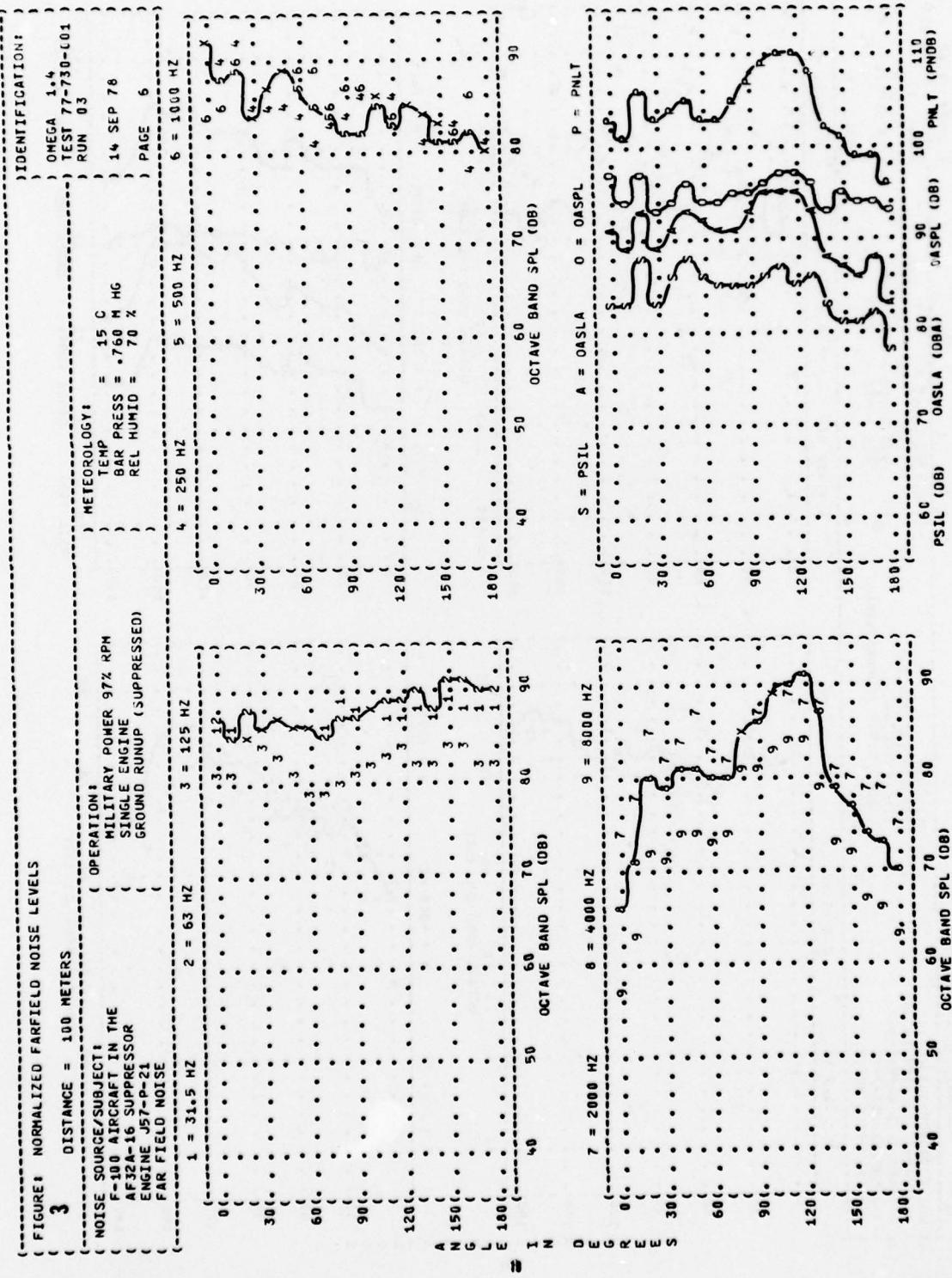
22



23



24



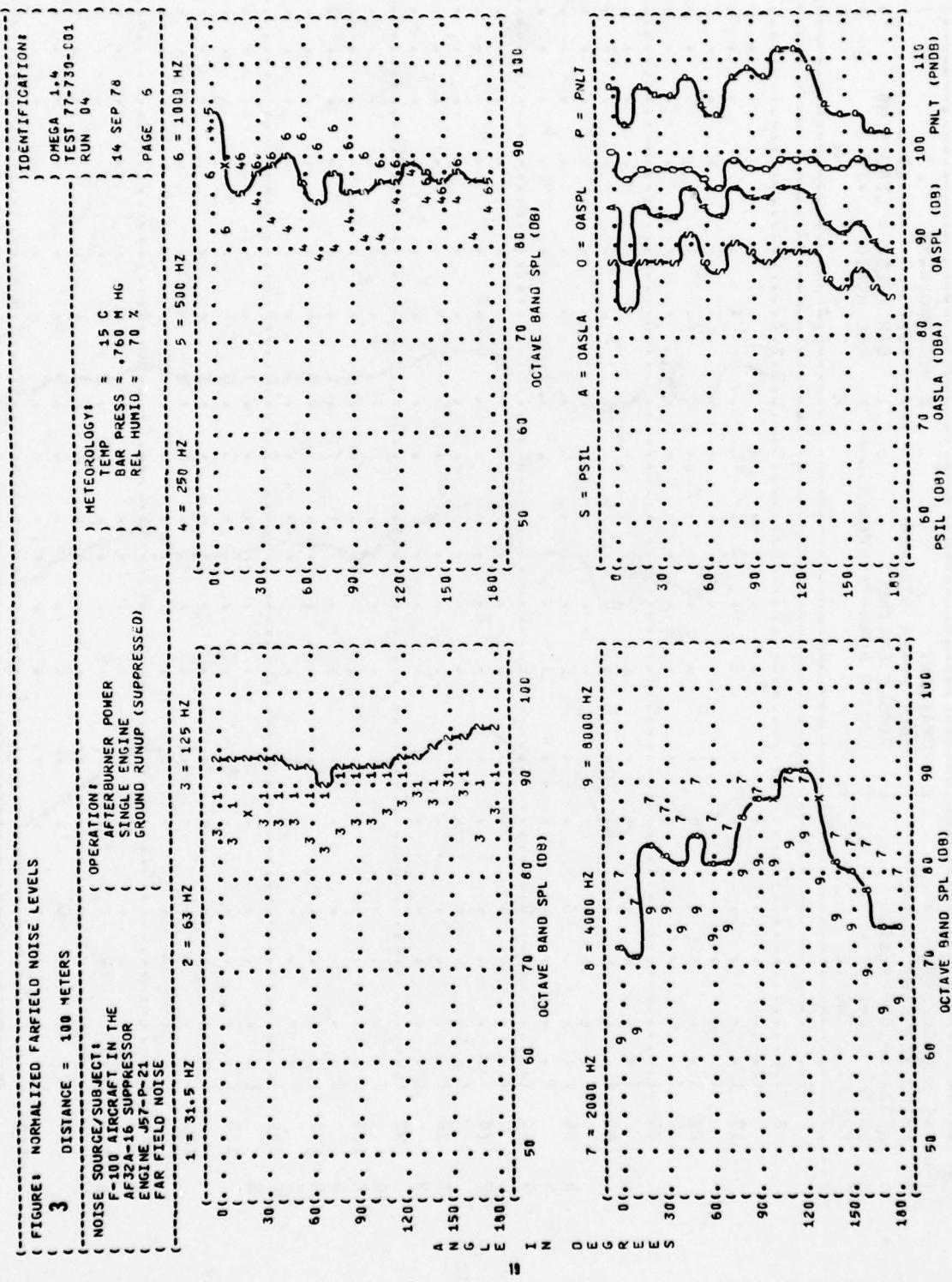
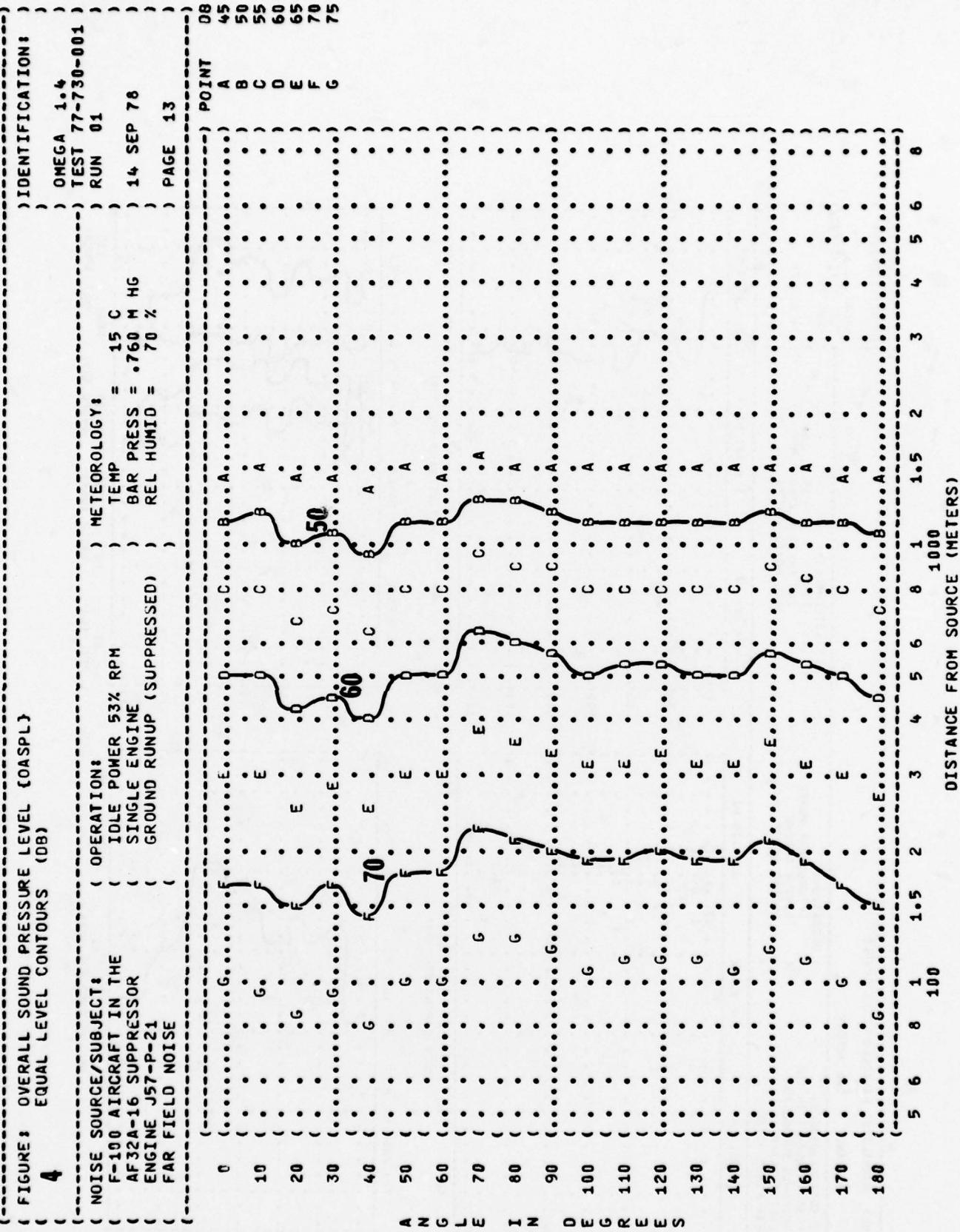


FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)  
4 EQUAL LEVEL CONTOURS (DB)



4 FIGURE 4: OVERALL SOUND PRESSURE LEVEL (OASPL)  
EQUAL LEVEL CONTOURS (DB)

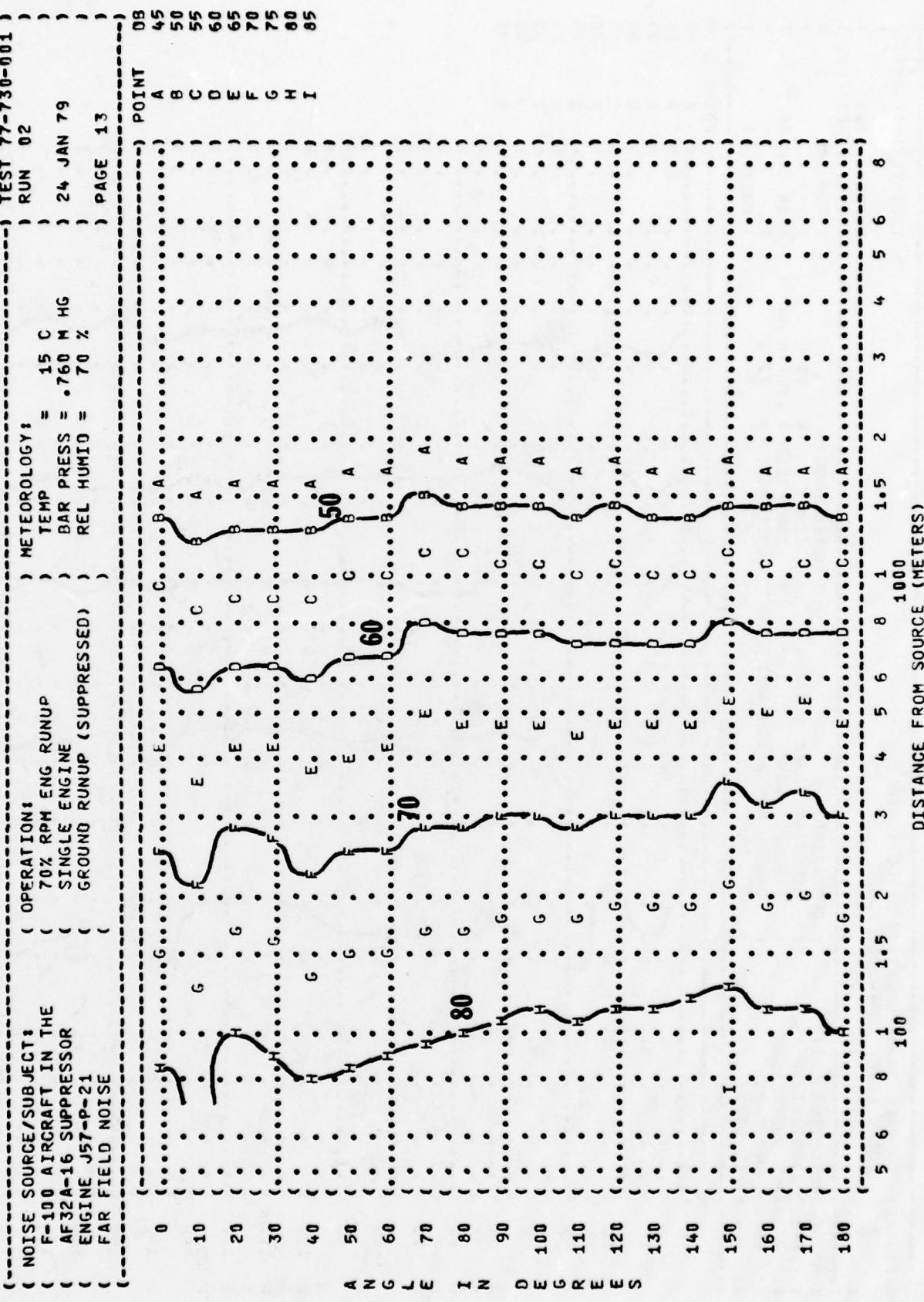


FIGURE 4: OVERALL SOUND PRESSURE LEVEL (OASPL)  
EQUAL LEVEL CONTOURS (dB)

OMEGA 1:4 TEST 77-730-001

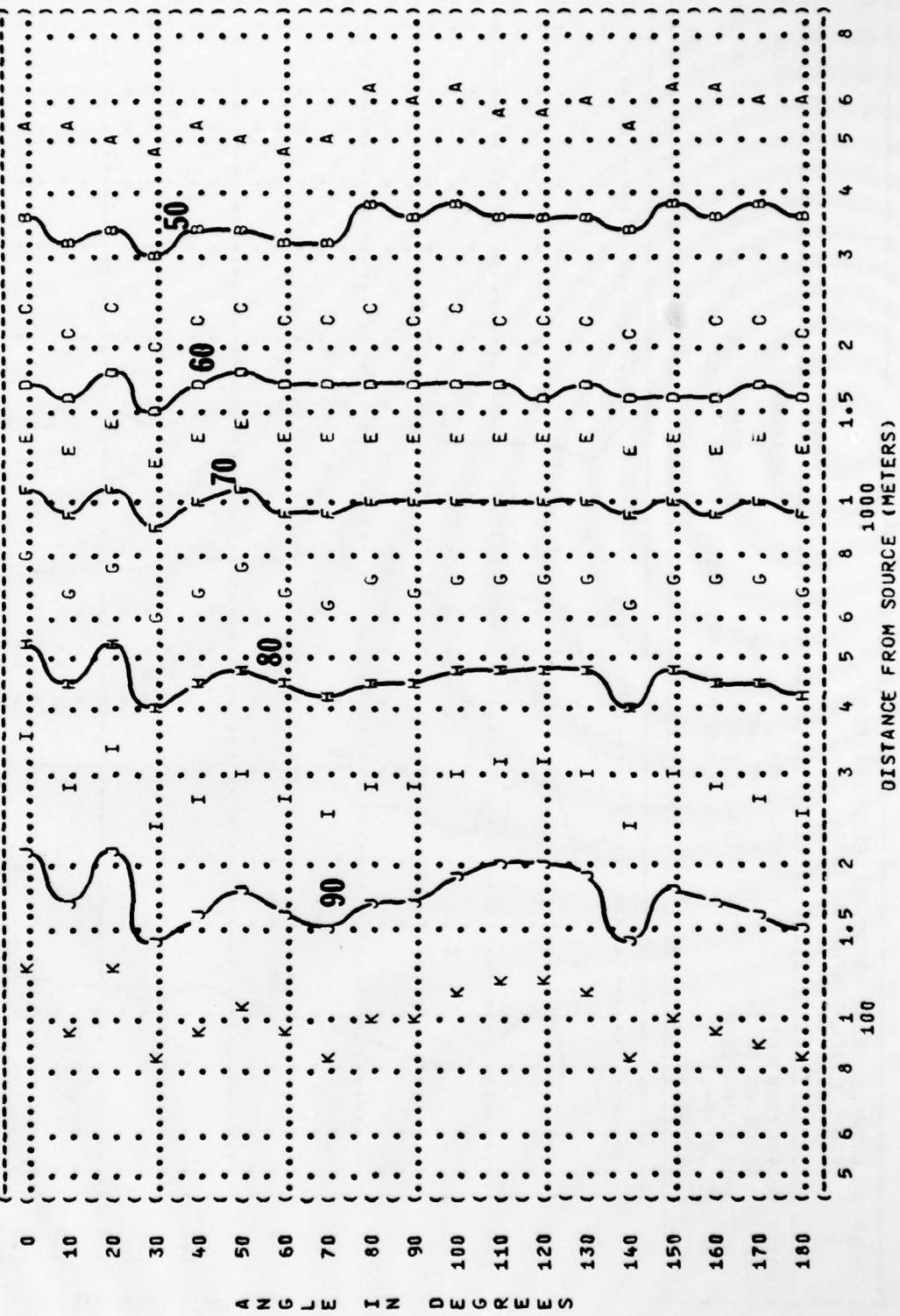
NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE AF 32A-16 SUPPRESSOR ENGINE J57-P-21 FAR FIELD NOISE

OPERATION: MILITARY POWER 97% RPM  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

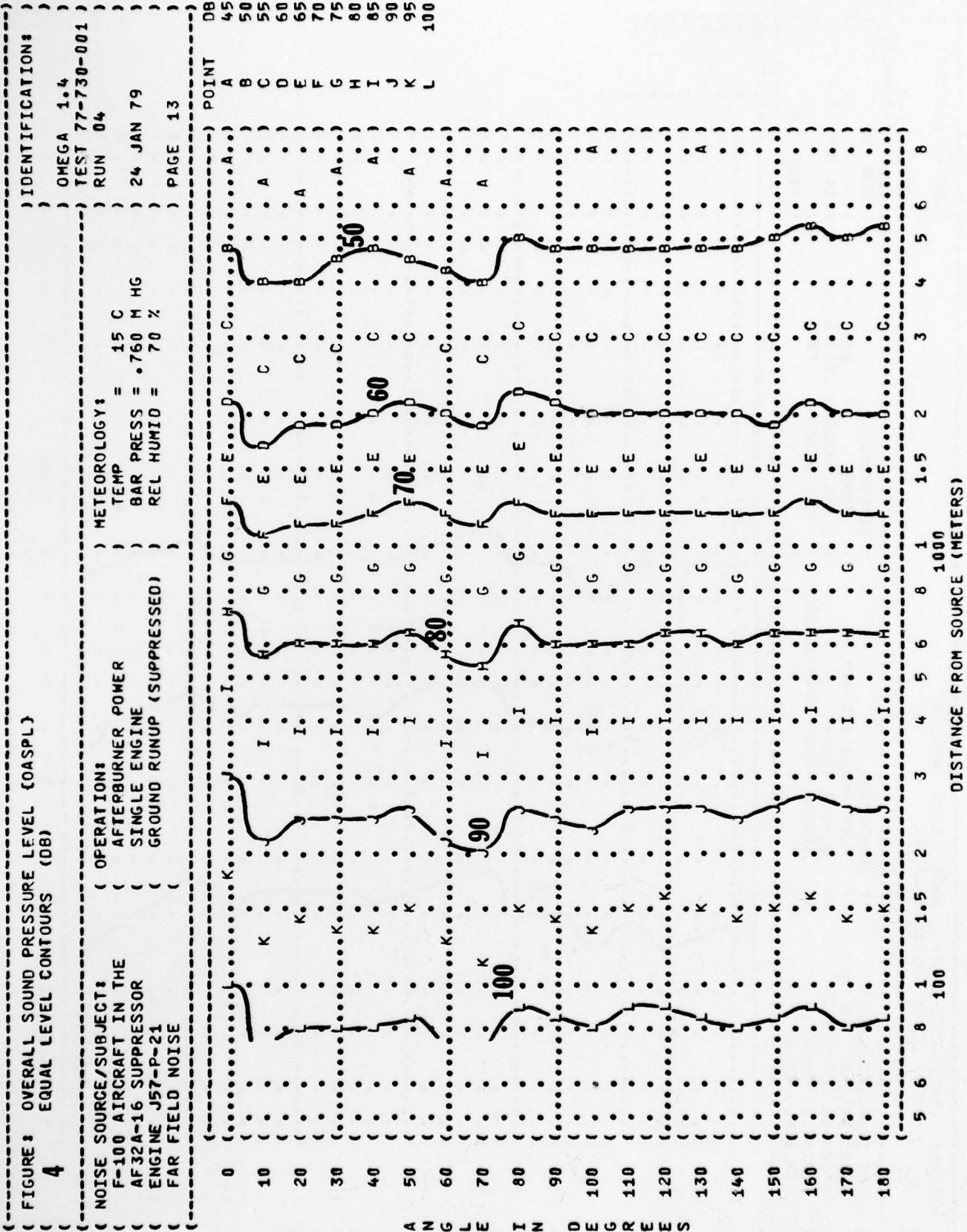
METEOROLOGY: TEMP = 15 C  
BAR PRESS = .760 MM HG  
REL HUMID = 70 %

TEST 77-730-001 RUN 03  
14 SEP 78 PAGE 13

Distance (ft)	Point	Noise Level (dB)
0	A	0
5	B	45
10	C	30
15	D	40
20	E	35
25	F	45
30	G	30
35	H	50
40	I	40
45	J	45
50	K	45



( FIGURE 4 OVERALL SOUND PRESSURE LEVEL (OASPL) EQUAL LEVEL CONTOURS (DB)



( FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)  
 5 EQUAL LEVEL CONTOURS (DBC)

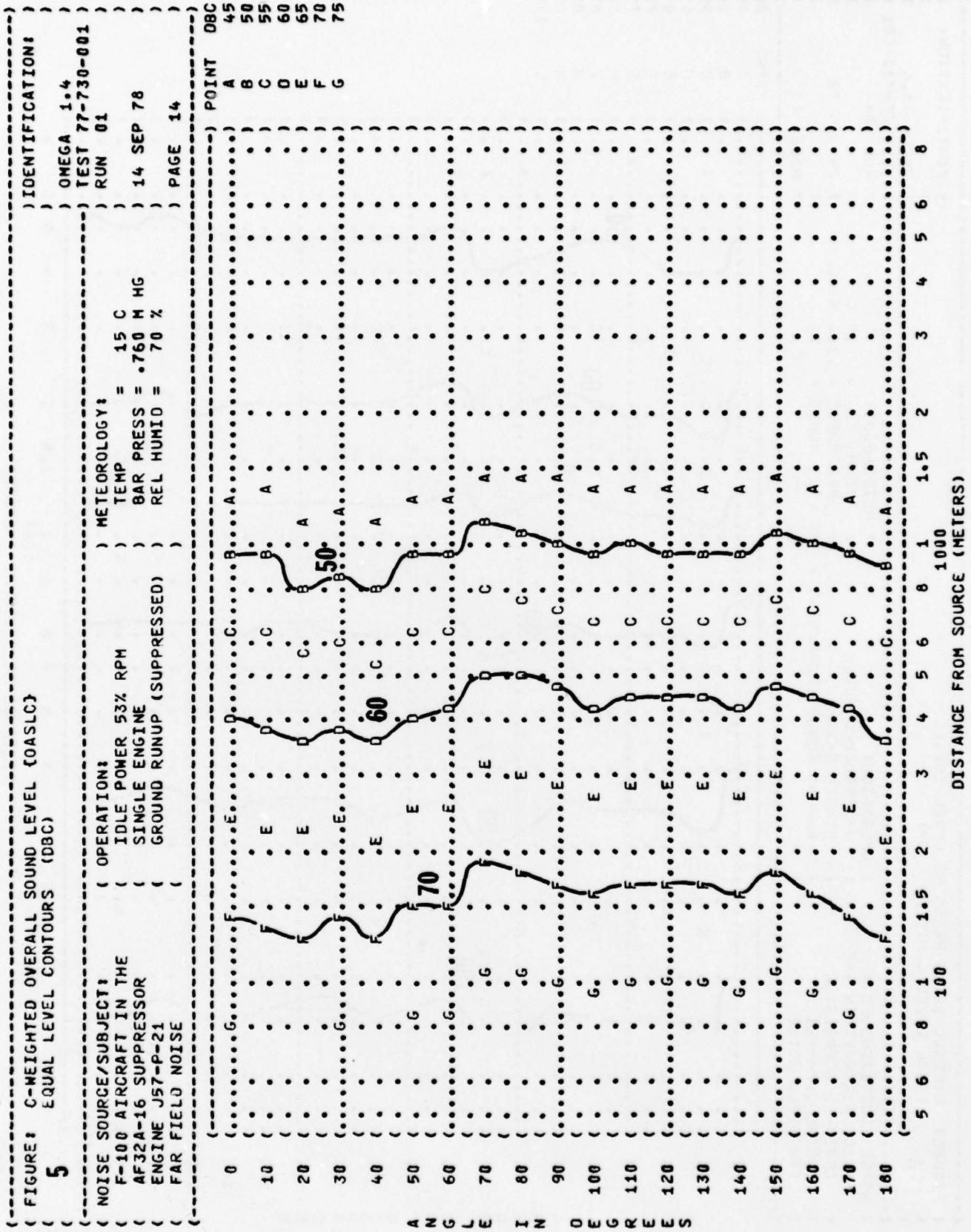
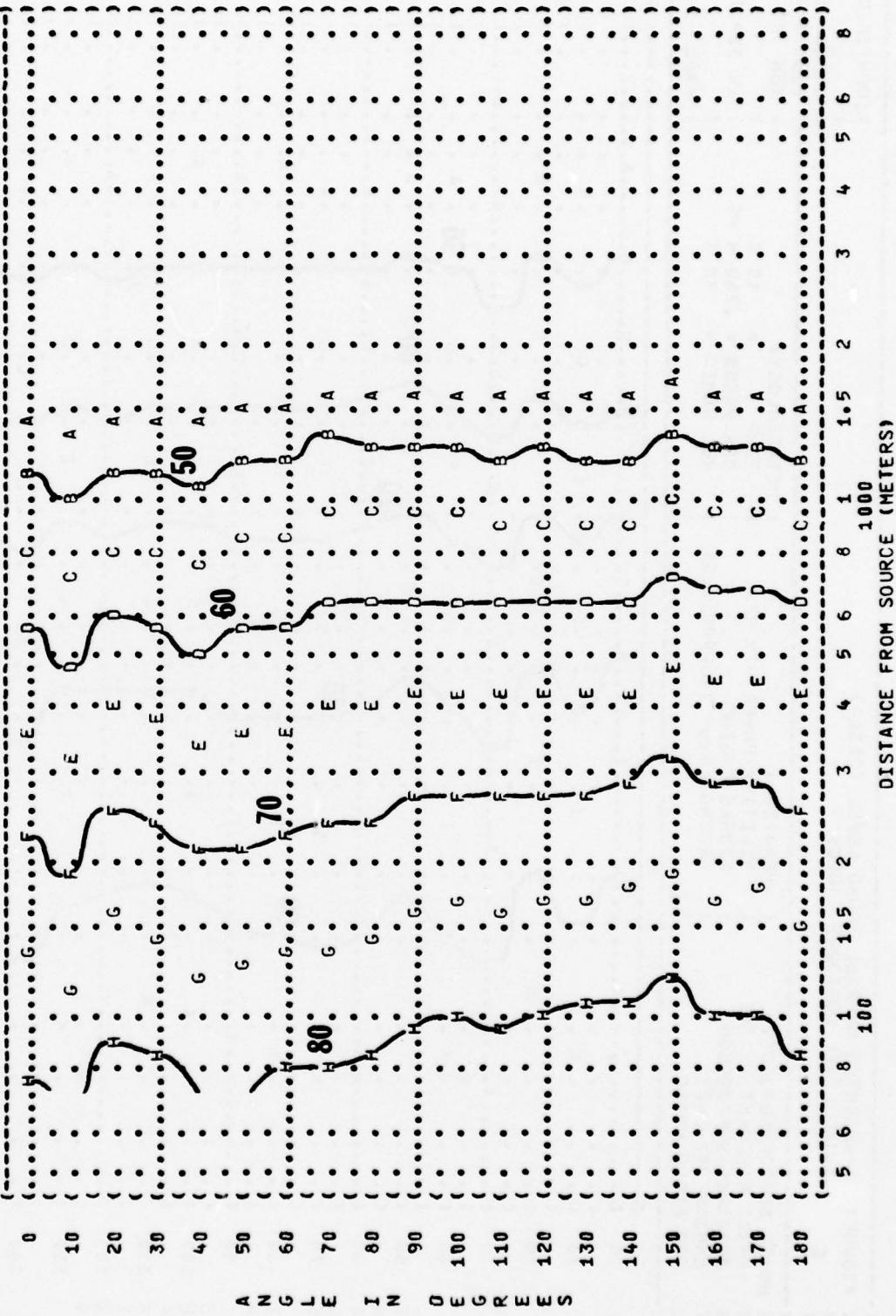


FIGURE 8 C-WEIGHTED OVERALL SOUND LEVEL (OASLC)  
EQUAL LEVEL CONTOURS (DBC)

NOISE SOURCE/SUBJECT:	OPERATION:
F-100 AIRCRAFT IN THE	70% RPM ENG RUNUP
AF32A-16 SUPPRESSOR	SINGLE ENGINE
ENGINE J57-P-21	GROUND RUNUP (SUPPRESSED)
FAR FIELD NOISE	

POINT	OBC
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80

METEOROLOGY:  
TEMP BAR PRESS REL HUMID



{ FIGURE 5 EQUAL LEVEL CONTOURS (DBC)

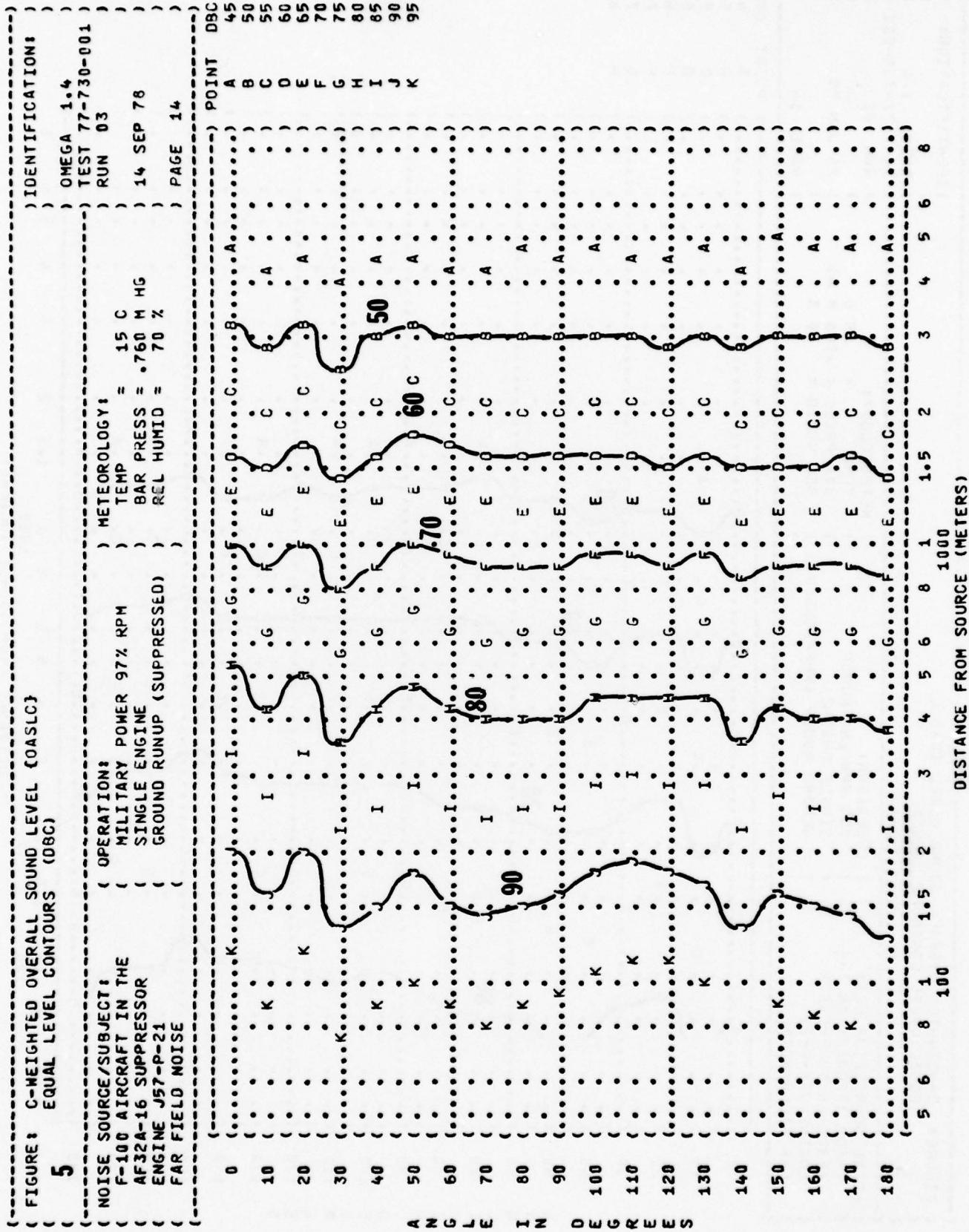


FIGURE 5 C-WEIGHTED OVERALL SOUND LEVEL (DB) EQUAL LEVEL CONTOURS (DBC)

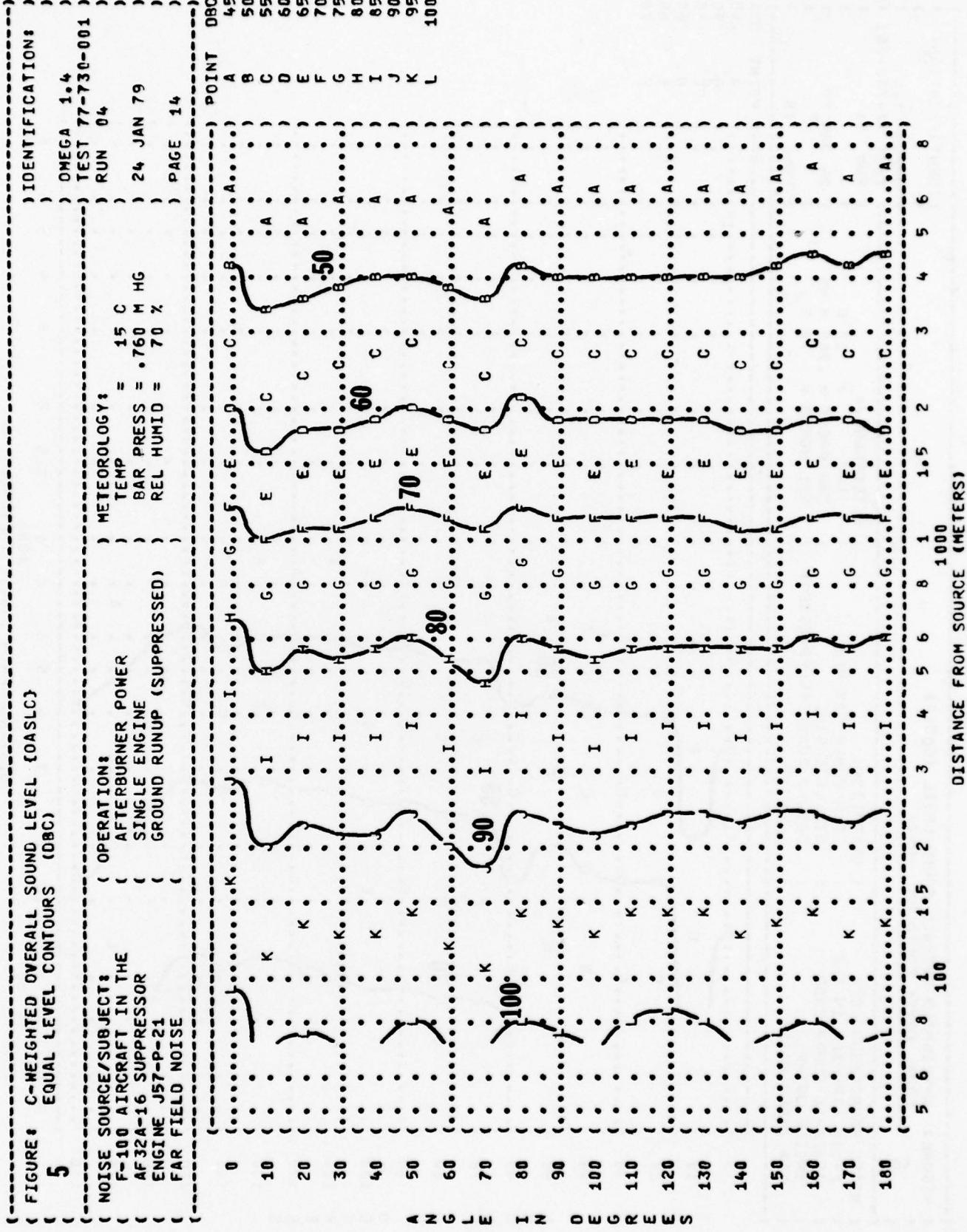


FIGURE 6 A-WEIGHTED OVERALL SOUND LEVEL (OASLA)  
EQUAL LEVEL CONTOURS (DBA)

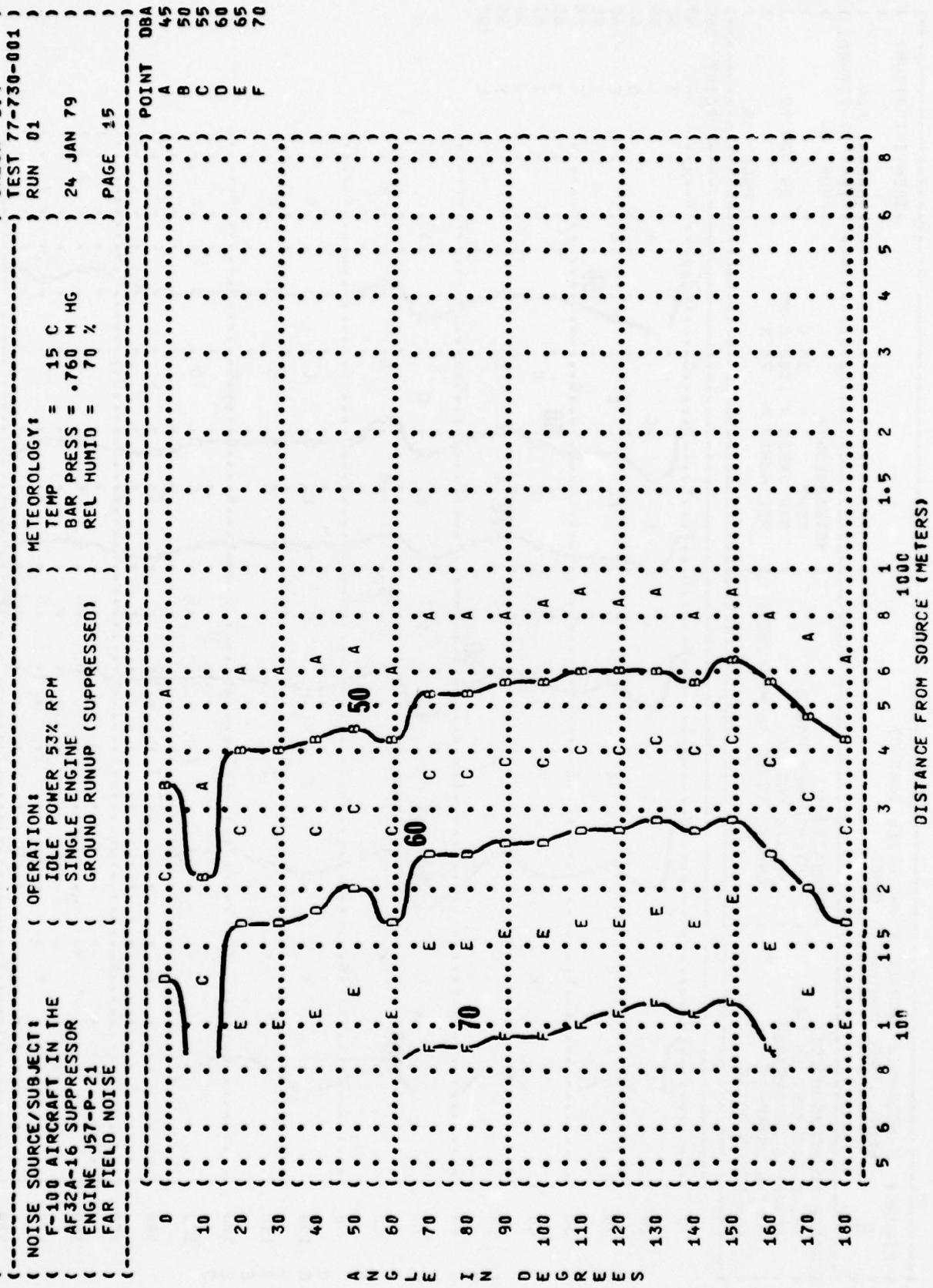


FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (DBA)  
**6** EQUAL LEVEL CONTOURS (DBA)

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 70% RPM ENG RUNUP  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 HG  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 02  
 24 JAN 79  
 PAGE 15

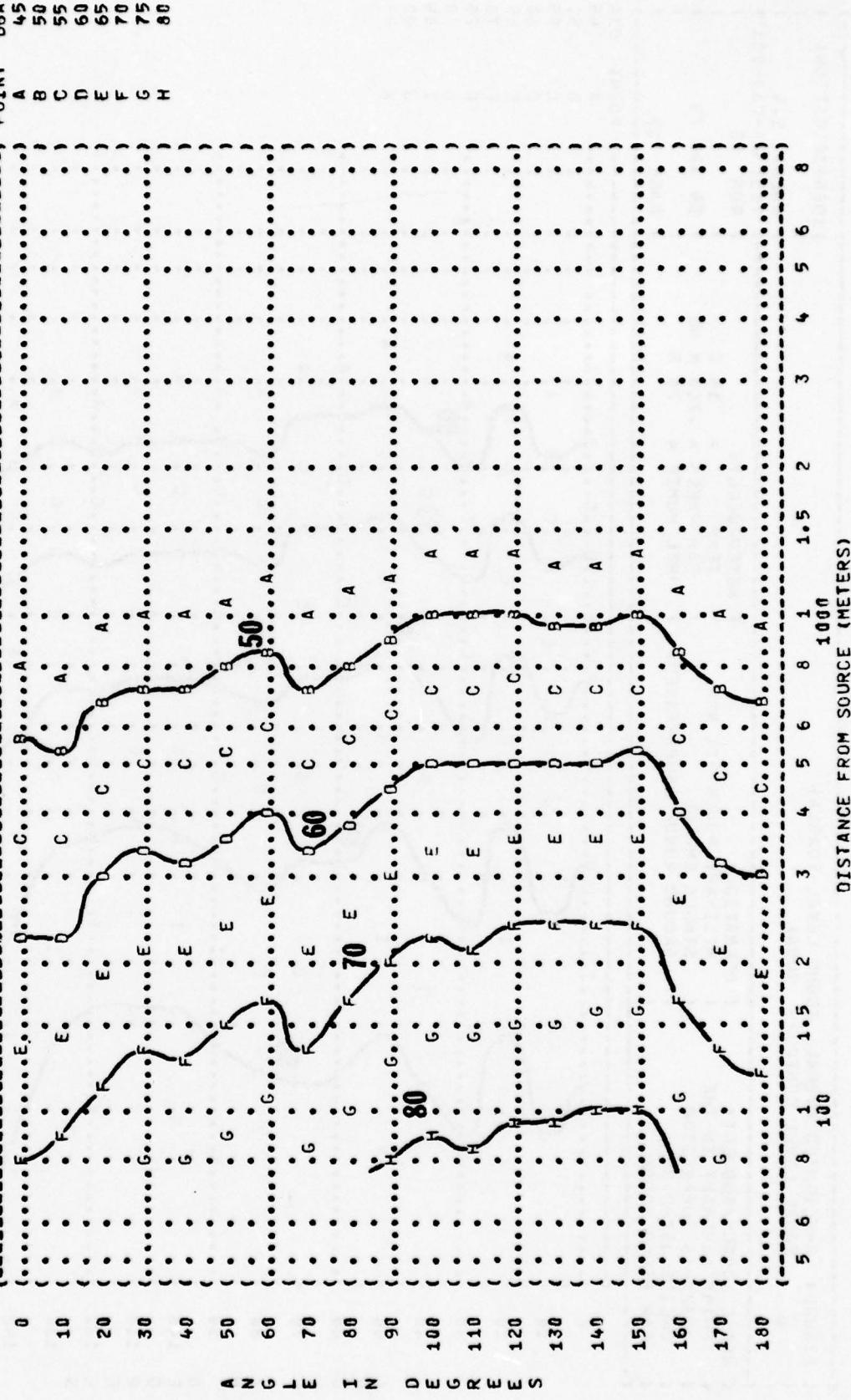


FIGURE 6. A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (CBA)

FIGURE 6  
A-WEIGHTED OVERALL SOUND LEVEL (OASLA)  
EQUAL LEVEL CONTOURS (DBA)

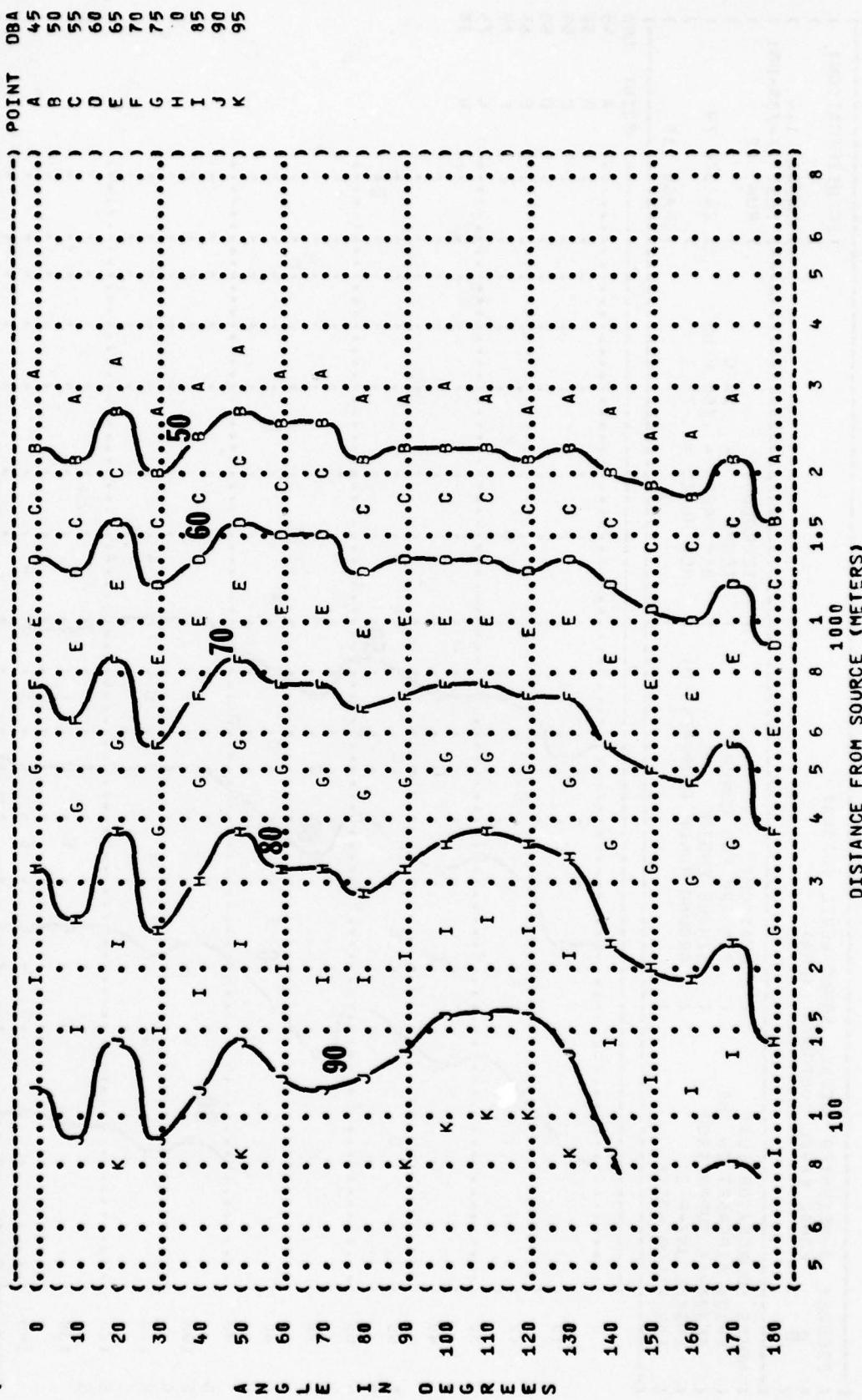
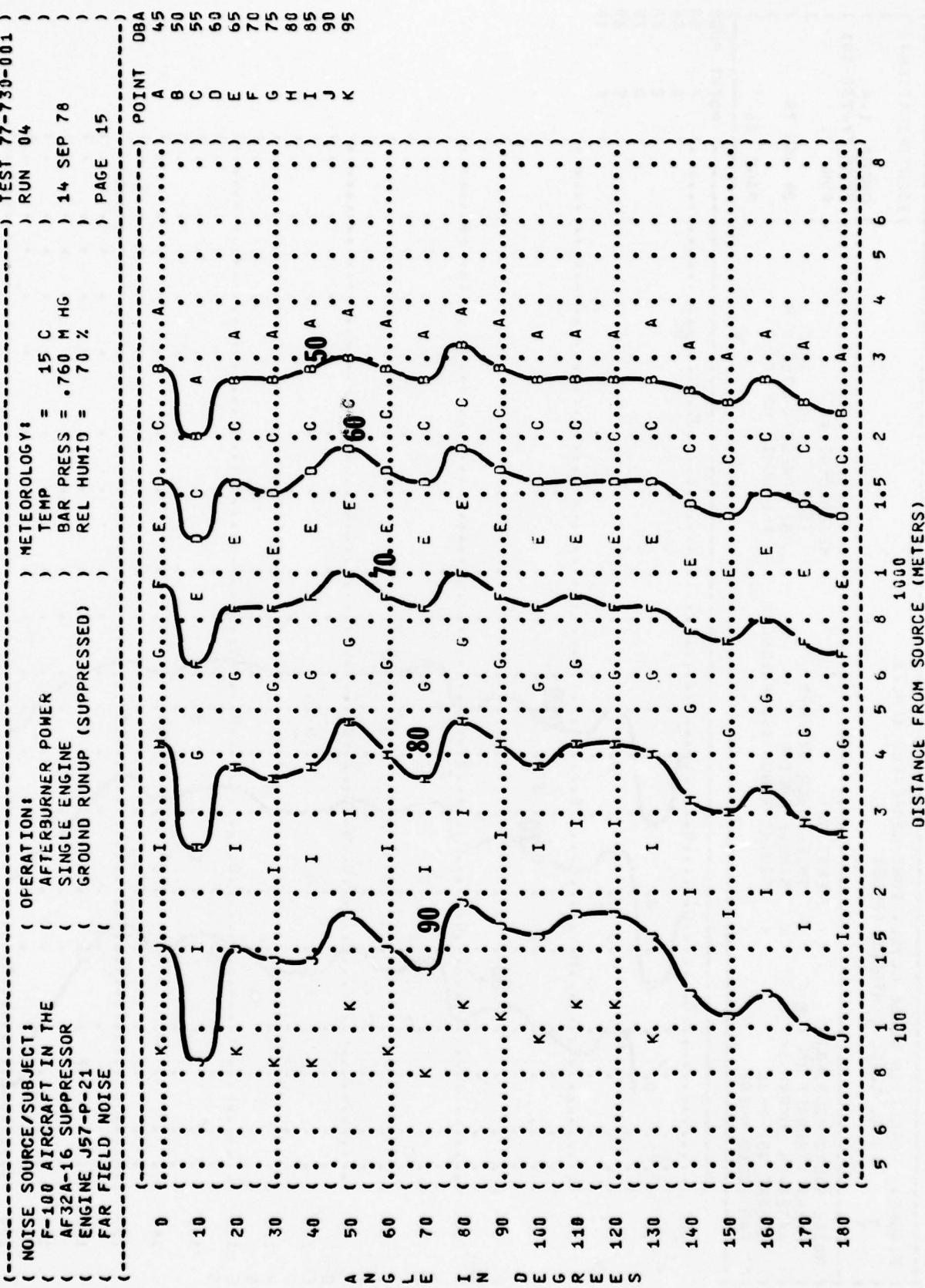


FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OBA)  
**6**  
 EQUAL LEVEL CONTOURS (OBA)



{ FIGURE 7 PERCEIVED NOISE LEVEL, TONE CORRECTED (PNDB)  
7 EQUAL LEVEL CONTOURS (PNDB)

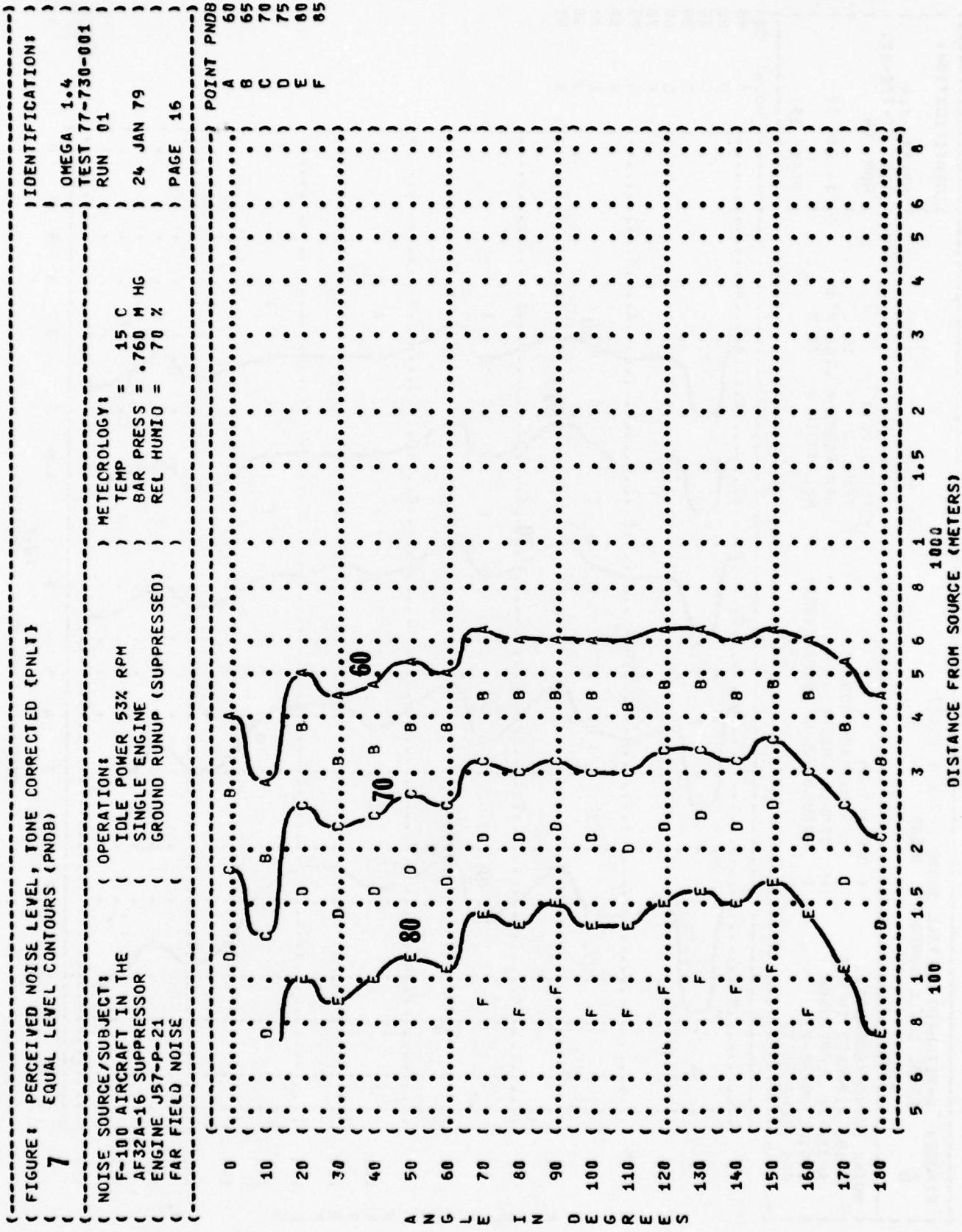


FIGURE 7 PERCEIVED NOISE LEVEL, TONE CORRECTED (PNDB) EQUAL LEVEL CONTOURS (PNDB)

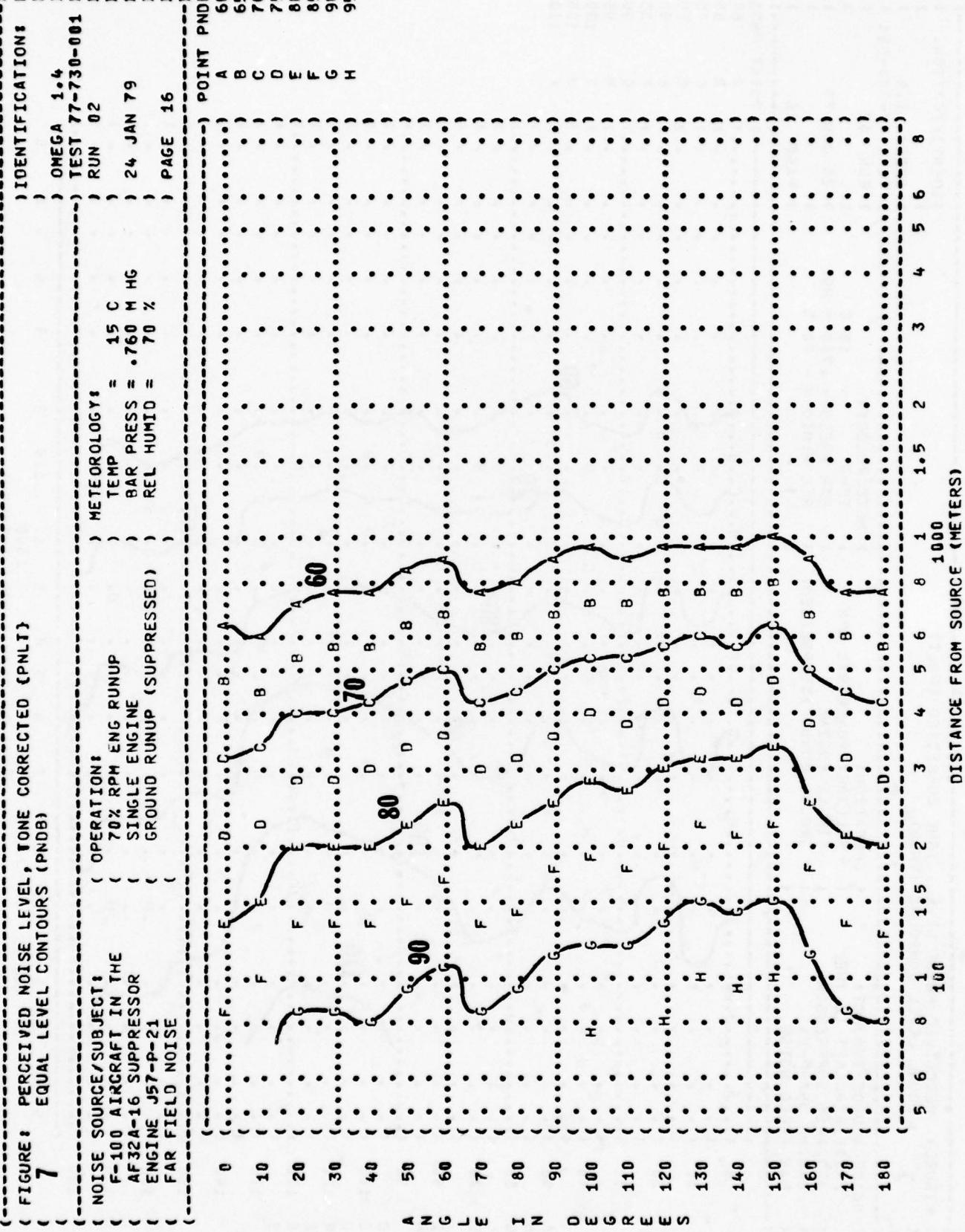
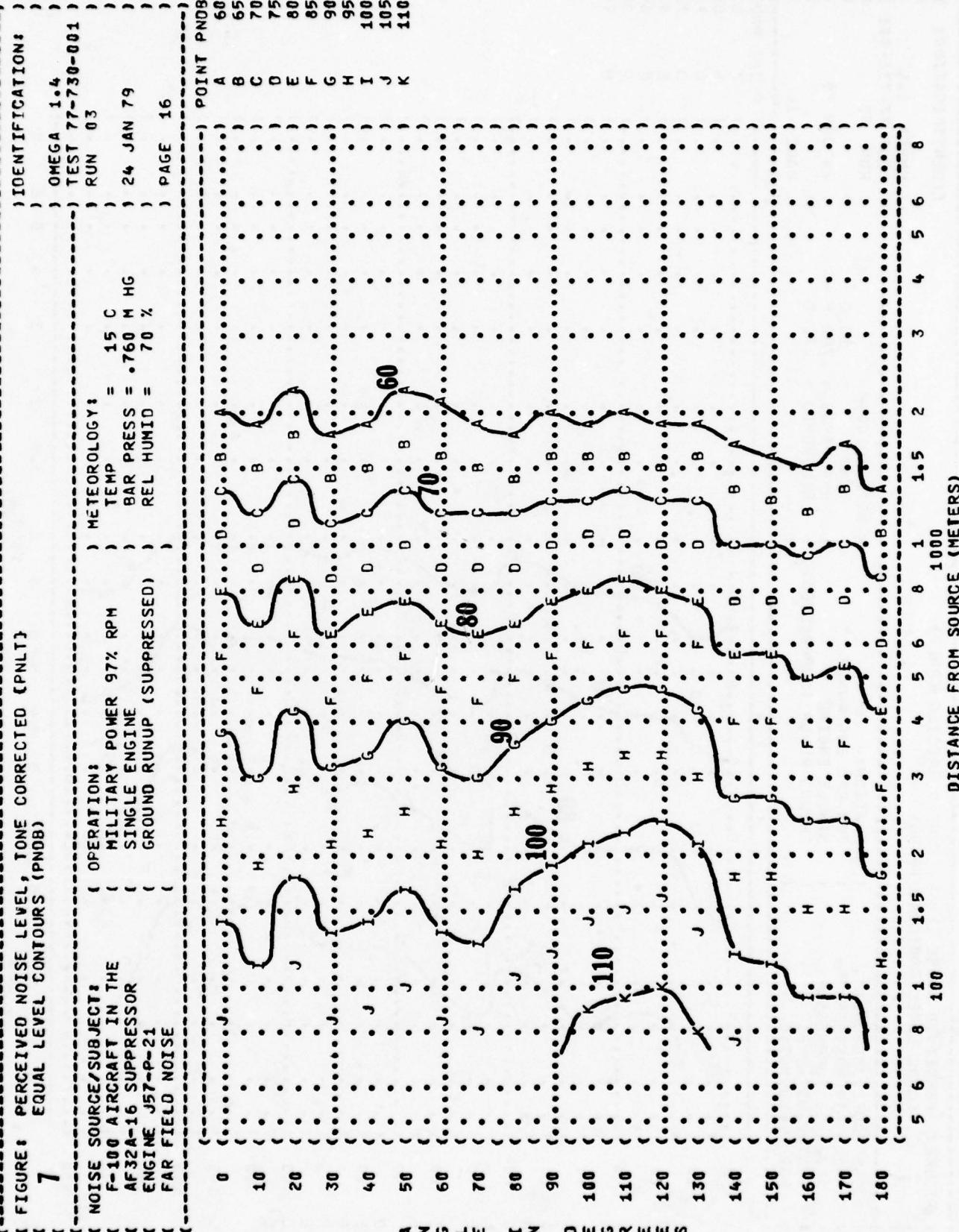


FIGURE: PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT)  
 7 EQUAL LEVEL CONTOURS (PNLT)



( FIGURE: PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT)  
 7  
 EQUAL LEVEL CONTOURS (PNLT)

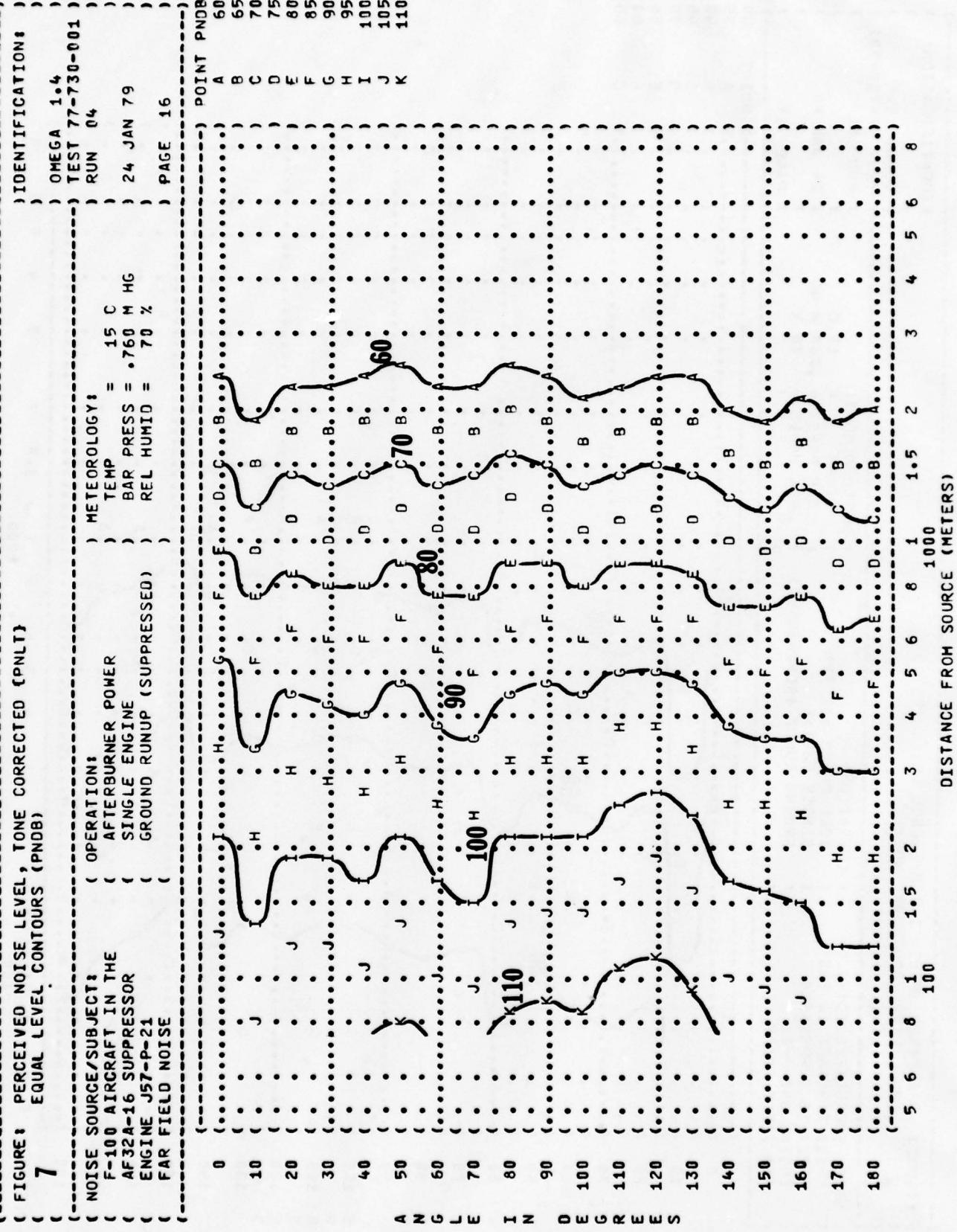


FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)  
 8 EQUAL LEVEL CONTOURS (DB)

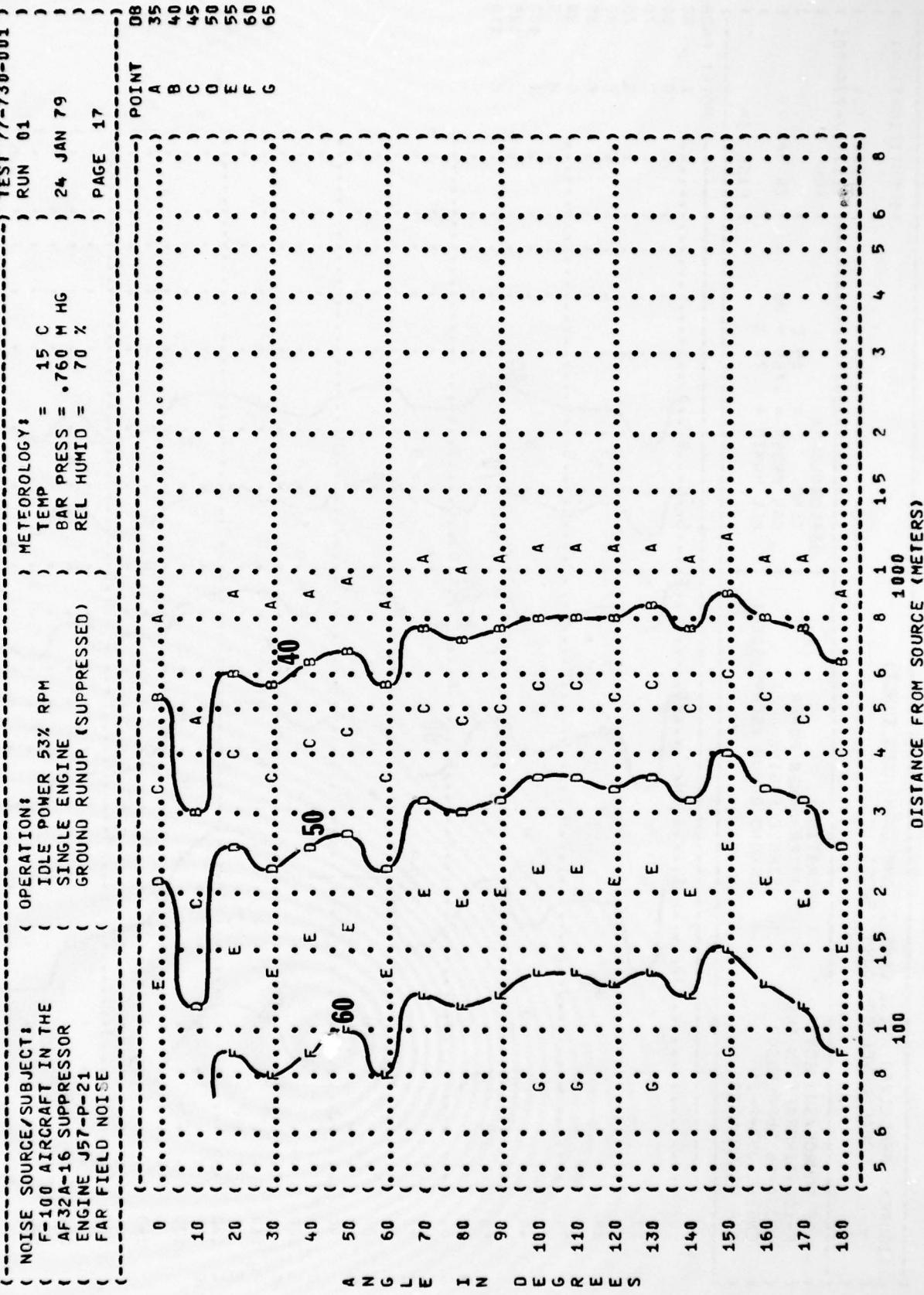
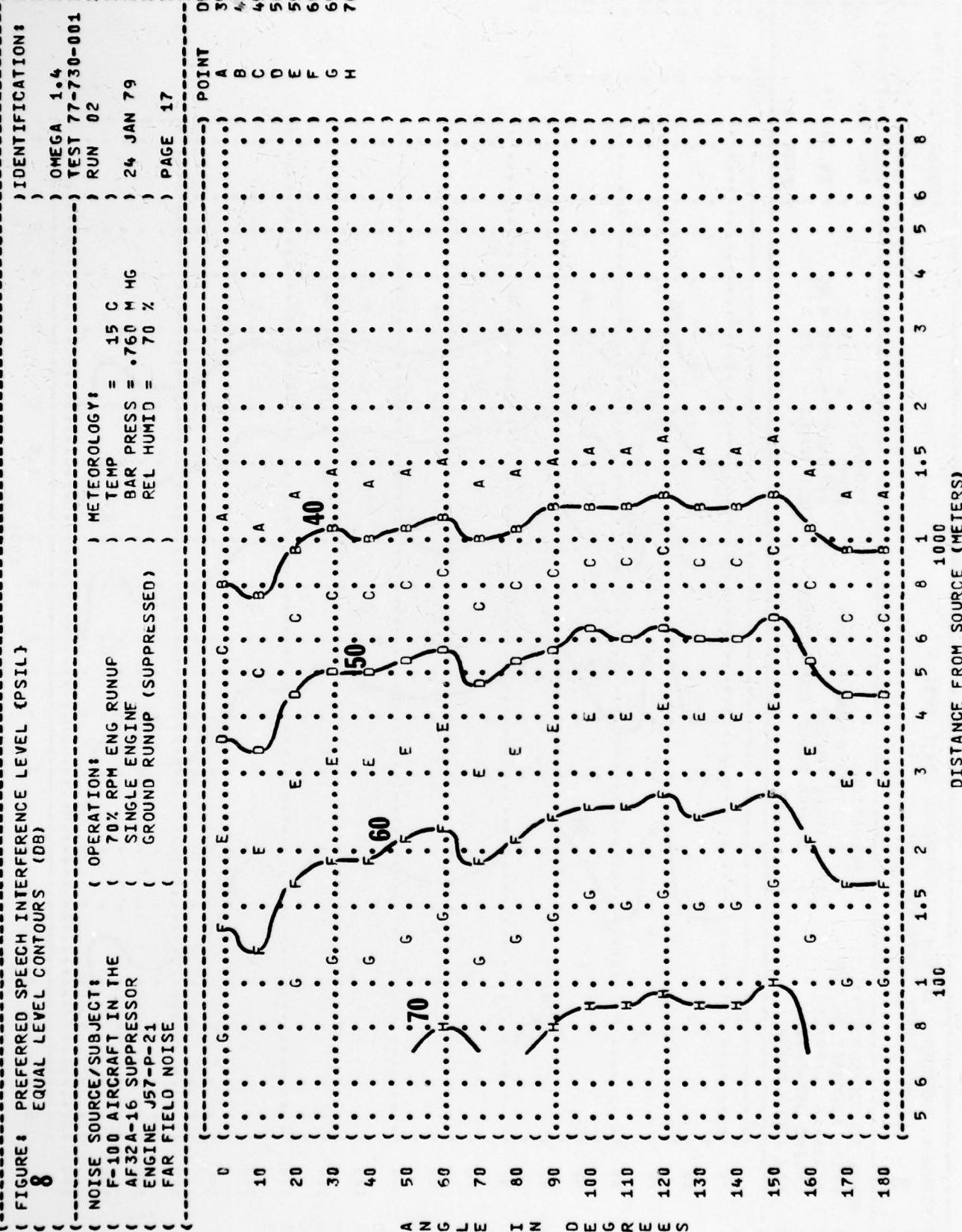


FIGURE 8 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)  
EQUAL LEVEL CONTOURS (DB)



**FIGURE 1: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) EQUAL LEVEL CONTOURS (DB)**

FIGURE 8 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) EQUAL LEVEL INTERFERENCE CONTOURS (DB)

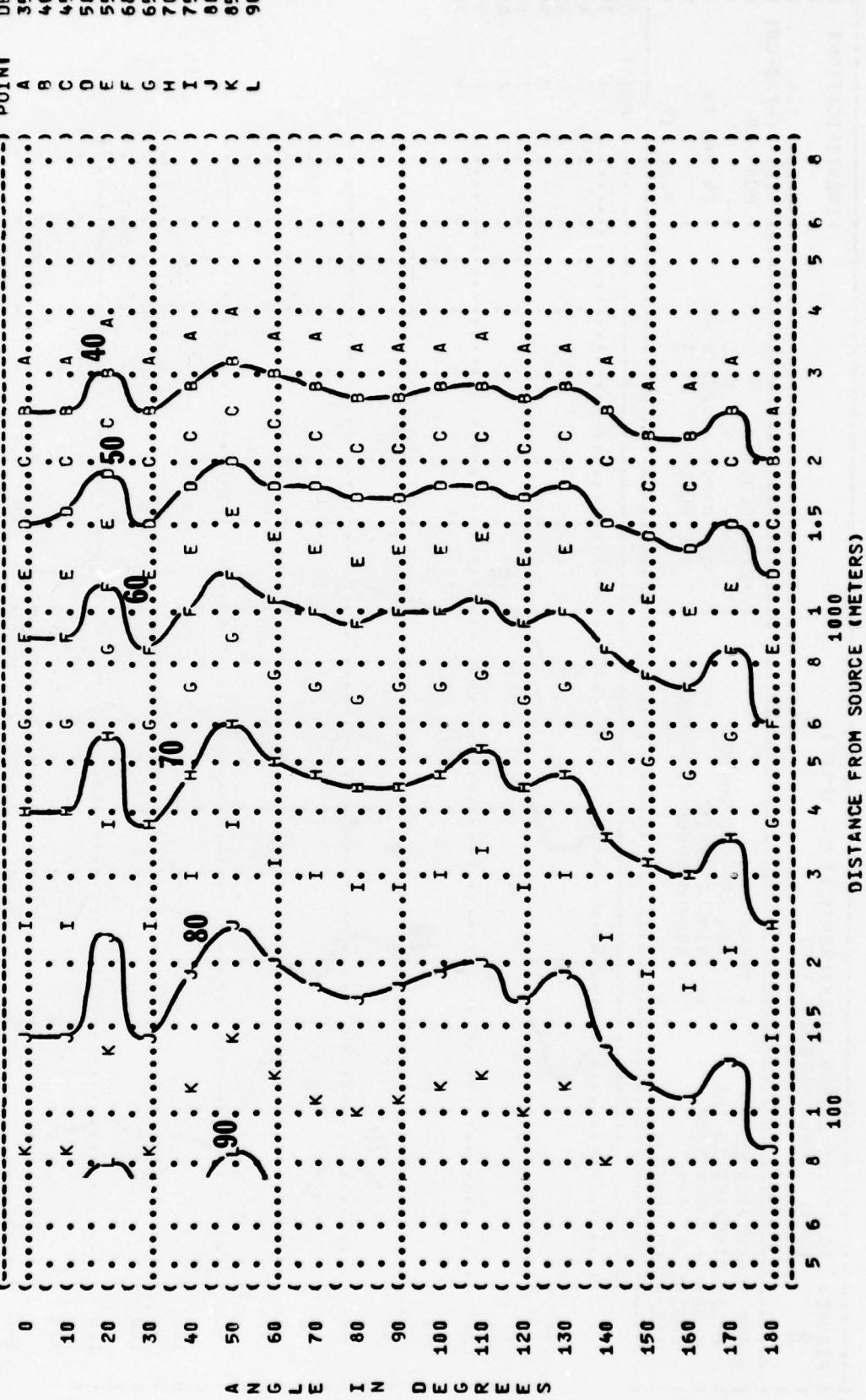
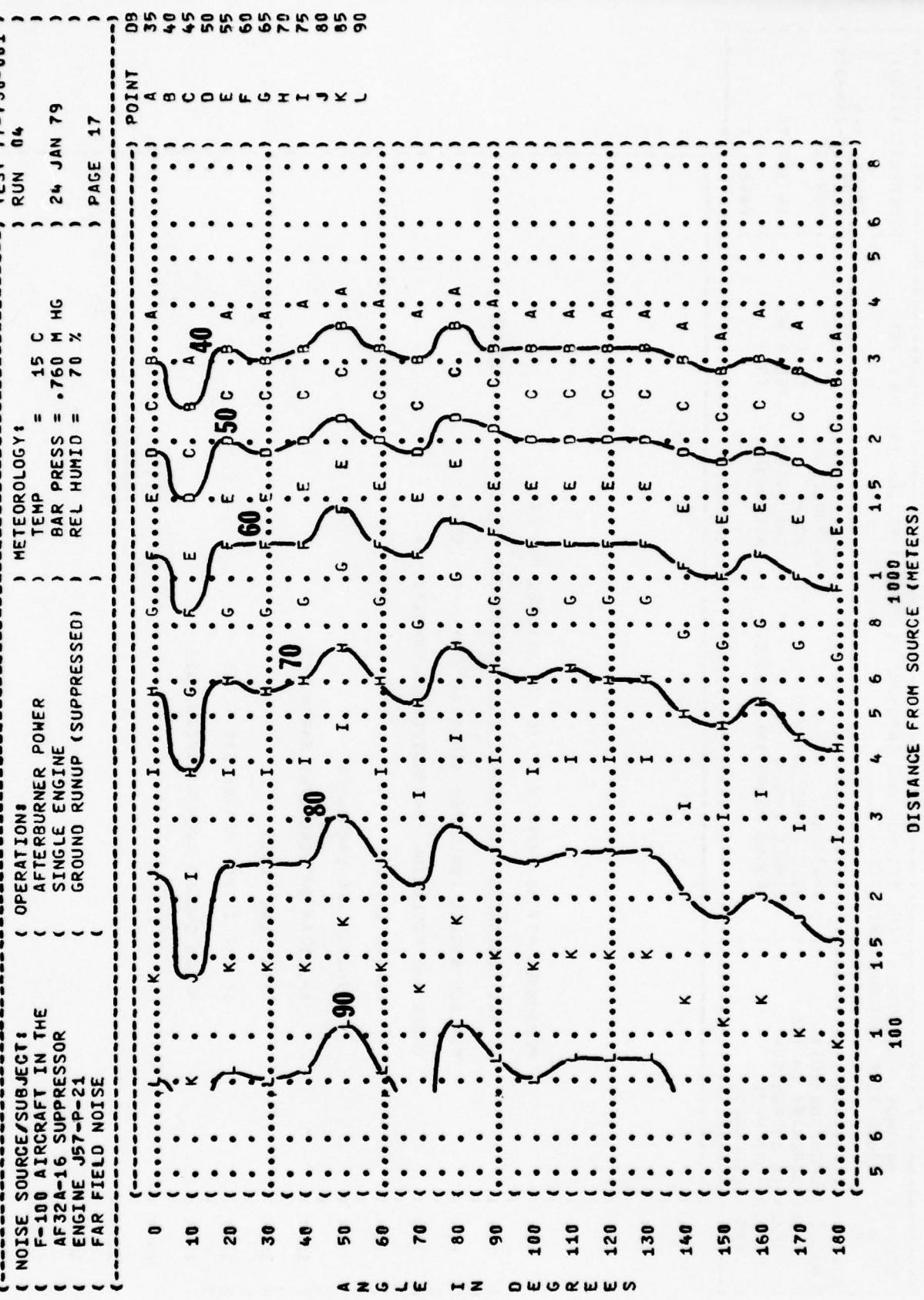


FIGURE 8 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)  
EQUAL LEVEL CONTOURS (DB)



( FIGURE: MAXIMUM PERMISSIBLE TIME (T<sub>1</sub>) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)  
 ( 9 EQUAL TIME CONTOURS (MINUTES)

( NOISE SOURCE/SUBJECT:  
 ( F-100 AIRCRAFT IN THE  
 ( AF32A-16 SUPPRESSOR  
 ( ENGINE J57-P-21  
 ( FAR FIELD NOISE

0<

10<

20<

30<

40<

A 50<

N 60<

G 70<

L 80<

E 90<

D 100<

E 110<

E 120<

S 130<

I 140<

150<

160<

170<

180<

( OPERATIONS:  
 ( IDLE POWER 53% RPM  
 ( SINGLE ENGINE  
 ( GROUND RUNUP (SUPPRESSED)

) METEOROLOGY:  
 ) TEMP = 15 C  
 ) BAR PRESS = .760 M HG  
 ) REL HUMID = 70 %  
 ) PAGE 7

) IDENTIFICATION:  
 ) OMEGA 1-4  
 ) TEST 77-730-001  
 ) RUN 01

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY  
 AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS  
 FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)  
 UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:  
 NO PROTECTION  
 MINIMUM QPL EAR MUFFS  
 AMERICAN OPTICAL 1700 EAR MUFFS  
 V-51R EAR PLUGS  
 COMFIT TRIPLE FLANGE EAR PLUGS  
 H-133 GROUND COMMUNICATION UNIT

DISTANCE FROM SOURCE (METERS)

5 6 8 1 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8

1000



FIGURE 9 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)  
 EQUAL TIME CONTOURS (MINUTES)

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION: 70% RPM ENG RUNUP  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY: TEMP = 15 C  
 BAR PRESS = .760 Hg  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 02  
 OMEGA 1.04  
 PAGE 8

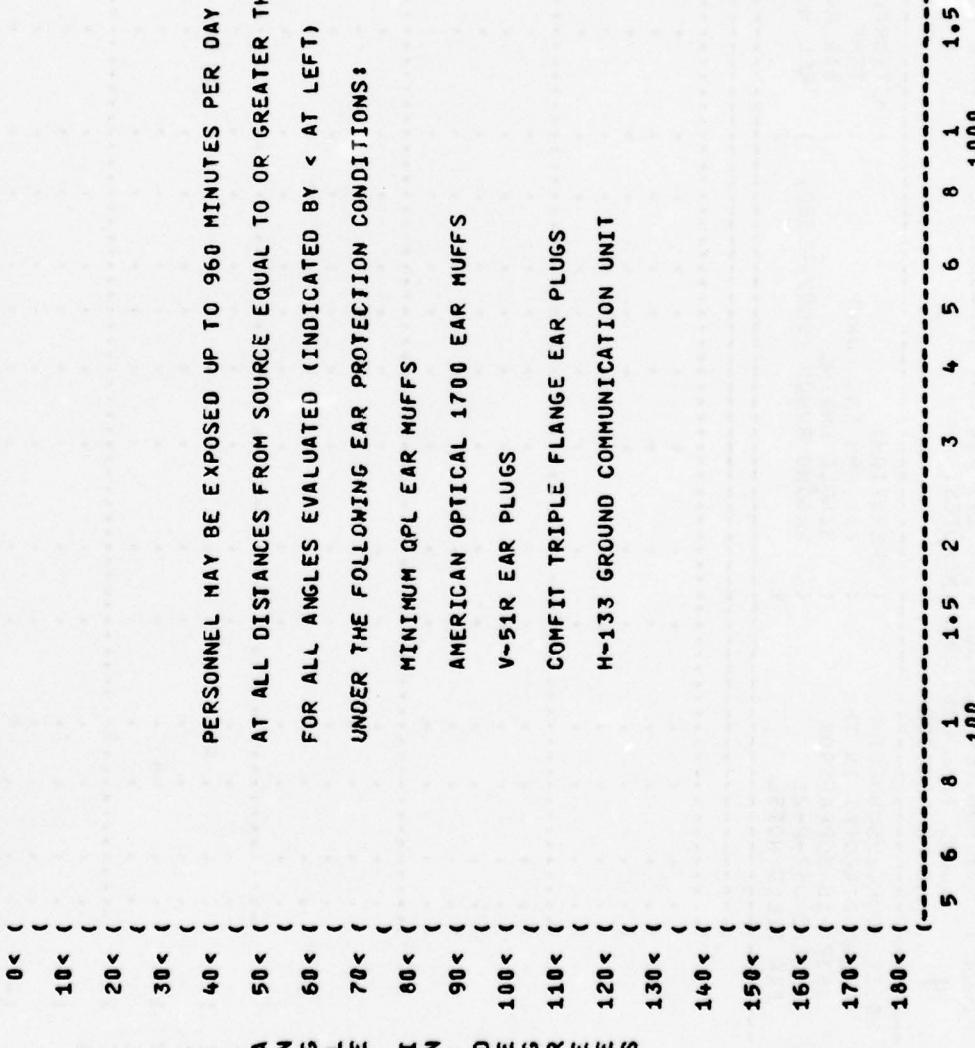




FIGURE 4 MAXIMUM PERMISSIBLE TIME (TT) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)  
 EQUAL TIME CONTOURS (MINUTES)

9

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 MILITARY POWER 97% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 MM HG  
 REL HUMID = 70 %

PAGE 8

TEST 77-730-001

OMEGA 1.4  
 RUN 03

100 5 6 8 1 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8

100 5 6 8 1 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY  
 AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS  
 FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)  
 UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

MINIMUM QPL EAR MUFFS

AMERICAN OPTICAL 1700 EAR MUFFS

V-51R EAR PLUGS

COMFIT TRIPLE FLANGE EAR PLUGS

H-133 GROUND COMMUNICATION UNIT

DISTANCE FROM SOURCE (METERS)

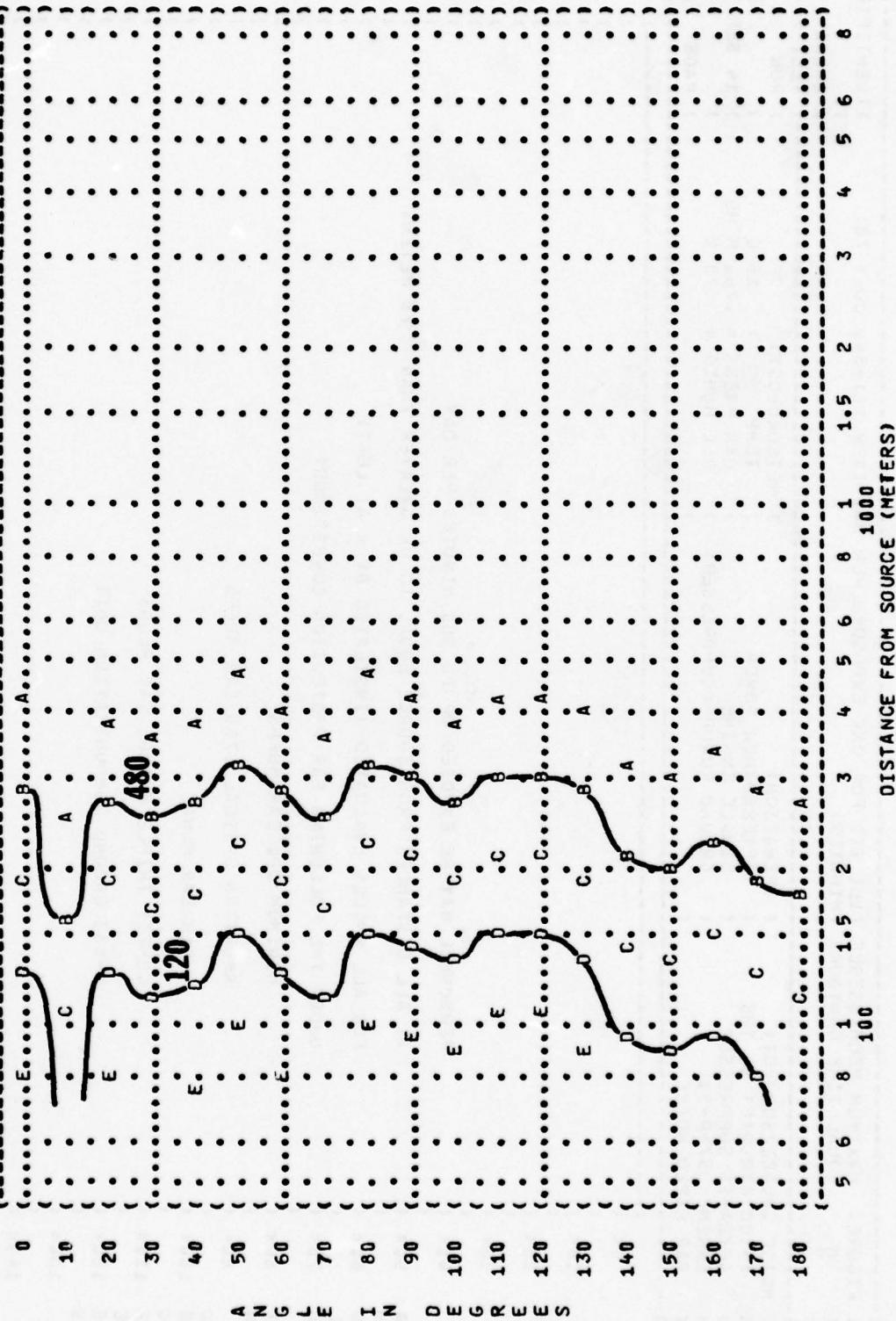
FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) IDENTIFICATION: 9 EQUAL TIME CONTOURS (MINUTES) NO PROTECTION

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE AF32A-16 SUPPRESSOR ENGINE J57-P-21 FAR FIELD NOISE

OPERATION: AFTERBURNER POWER SINGLE ENGINE GROUND RUNUP (SUPPRESSED)

METEOROLOGY: TEMP = 15 C BAR PRESS = .760 M HG REL HUMID = 70 %

TEST 77-738-001 RUN 04 PAGE 7



{ FIGURE 9 MAXIMUM PERMISSABLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)  
{ EQUAL TIME CONTOURS (MINUTES)

{ NOISE SOURCE/SUBJECT: ( OPERATION:  
{ F-100 AIRCRAFT IN THE ( AFTERBURNER POWER ) METEOROLOGY:  
{ AF32A-16 SUPPRESSOR ( SINGLE ENGINE = 15 C )  
{ ENGINE J57-P-21 ( GROUND RUNUP (SUPPRESSED) ) BAR PRESS = .760 M HG  
{ FAR FIELD NOISE ( ) REL HUMID = 70 %  
{

0 < ( )  
10 < ( )  
20 < ( )  
30 < ( )  
40 < ( )  
50 < ( )  
60 < ( )  
70 < ( )  
80 < ( )  
90 < ( )  
100 < ( )  
110 < ( )  
120 < ( )  
130 < ( )  
140 < ( )  
150 < ( )  
160 < ( )  
170 < ( )  
180 < ( )

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY  
AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS  
FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)  
UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:  
MINIMUM QPL EAR MUFFS  
AMERICAN OPTICAL 1700 EAR MUFFS  
V-51R EAR PLUGS  
COMFIT TRIPLE FLANGE EAR PLUGS  
H-133 GROUND COMMUNICATION UNIT

5 6 8 1 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8  
100 100 DISTANCE FROM SOURCE (METERS)

FIGURE 1 SOUND PRESSURE LEVEL (SPL)  
 10 EQUAL LEVEL CONTOURS  
 31.5 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 IDLE POWER 53% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 01  
 24 JAN 79  
 PAGE 18

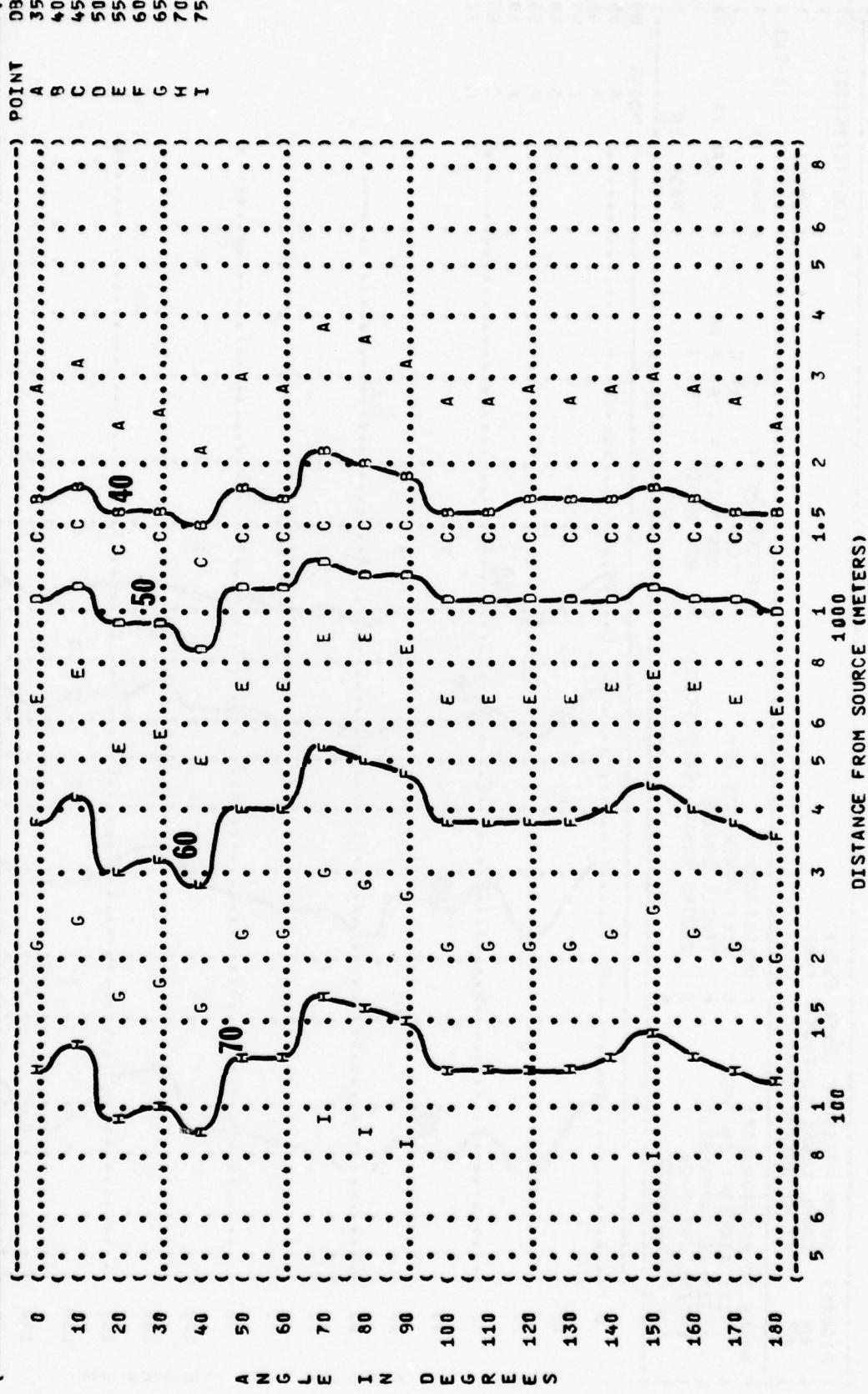


FIGURE 4 SOUND PRESSURE LEVEL (SPL)  
10 EQUAL LEVEL OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF 32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
IDLE POWER 53% RPM  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
TEMP = 15°C  
BAR PRESS = .760 MM HG  
REL HUMID = 70%

TEST 77-730-001  
RUN 01  
24 JAN 79  
PAGE 19

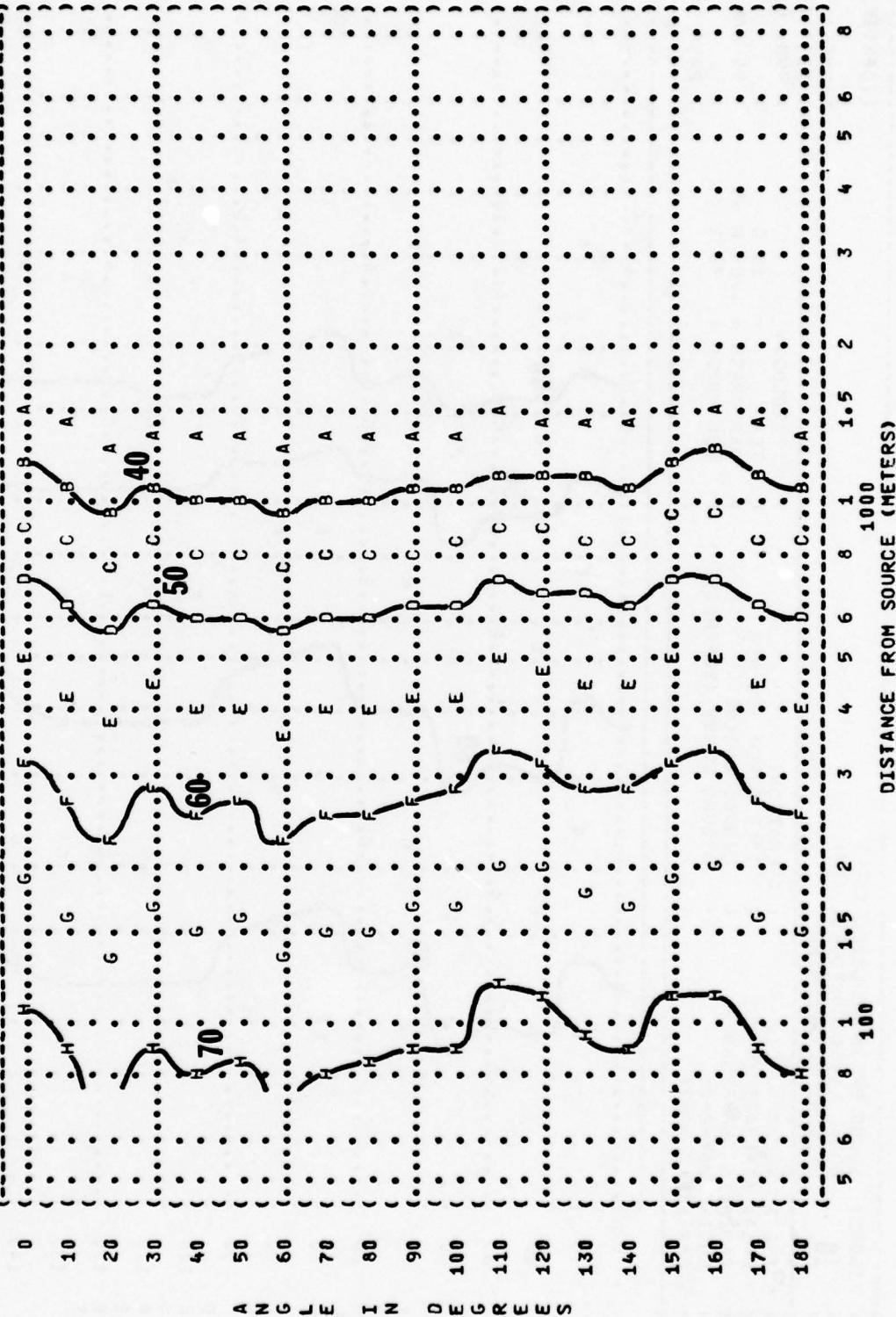


FIGURE: SOUND PRESSURE LEVEL (SPL)  
 10 EQUAL LEVEL CONTOURS (dB)  
 125 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF 32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

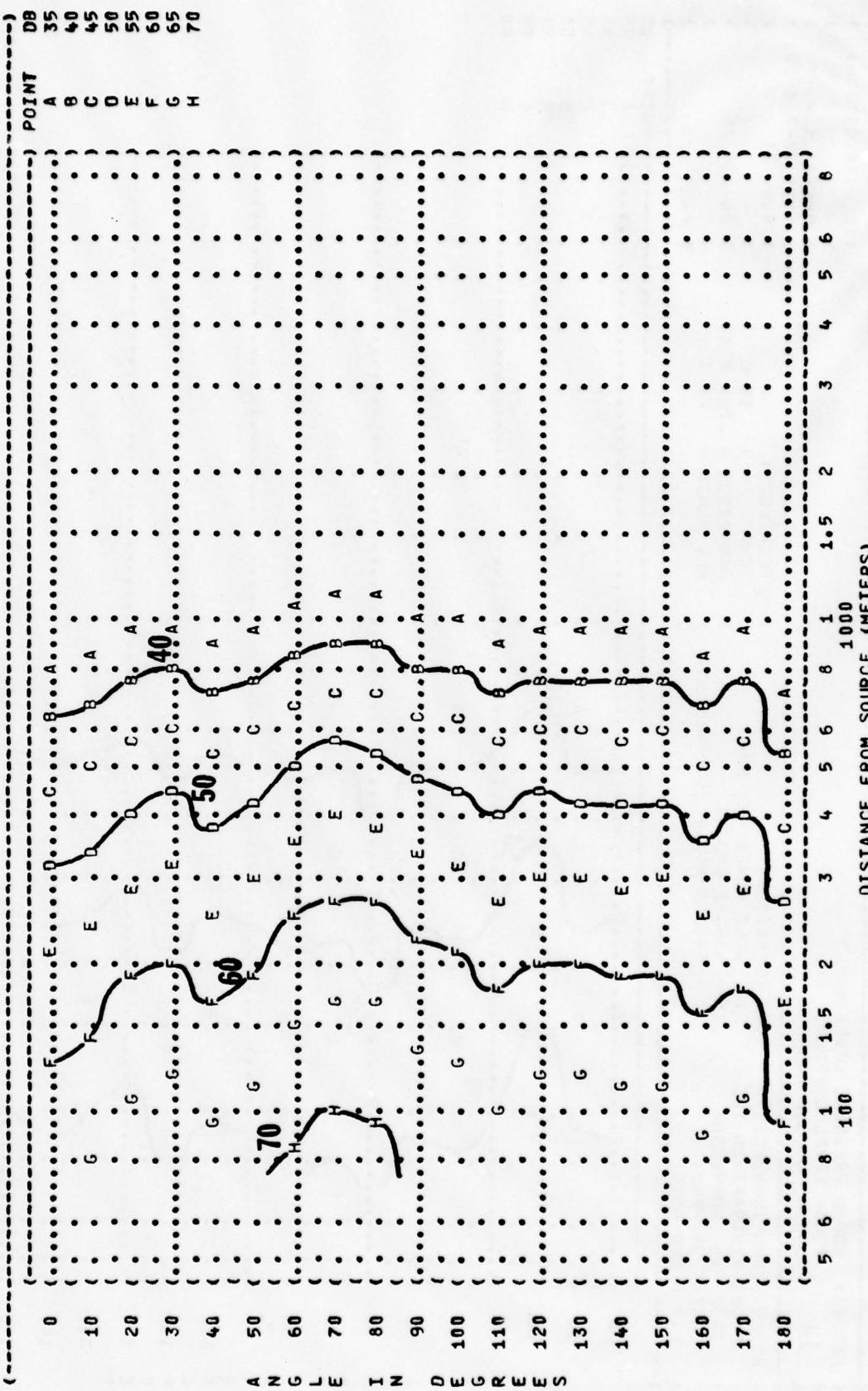


FIGURE 4 SOUND PRESSURE LEVEL (SPL)  
10 EQUAL LEVEL CONTOURS  
250 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE AF32A-16 SUPPRESSOR ENGINE J57-P-21 FAR FIELD NOISE

OPERATION: IDLE POWER 53% RPM  
SINGLE ENGINE GROUND RUNUP (SUPPRESSED)

METEOROLOGY: TEMP = 15 C  
BAR PRESS = .760 M HG  
REL HUMID = 70 %

TEST 77-730-001  
RUN 01  
PAGE 21

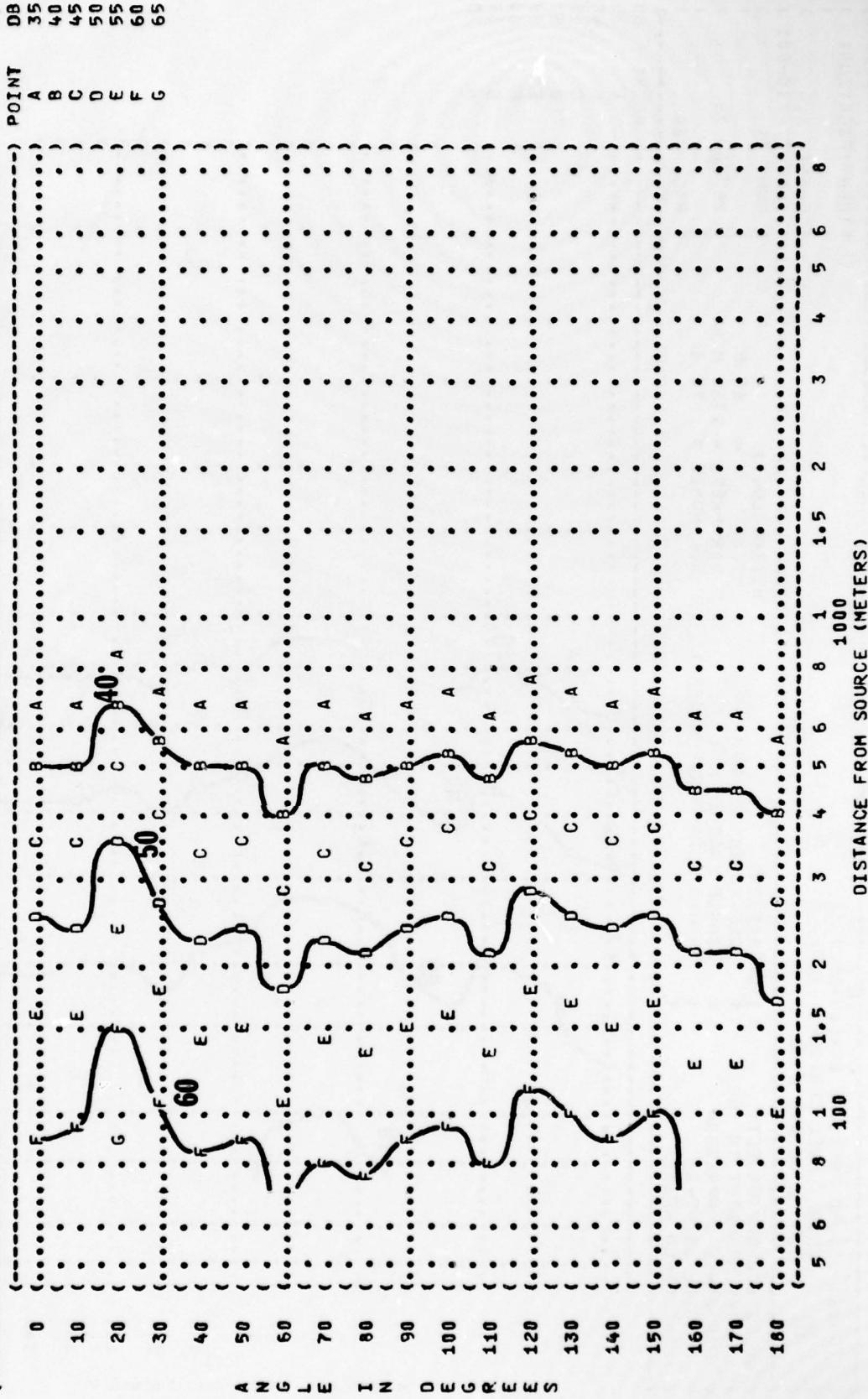
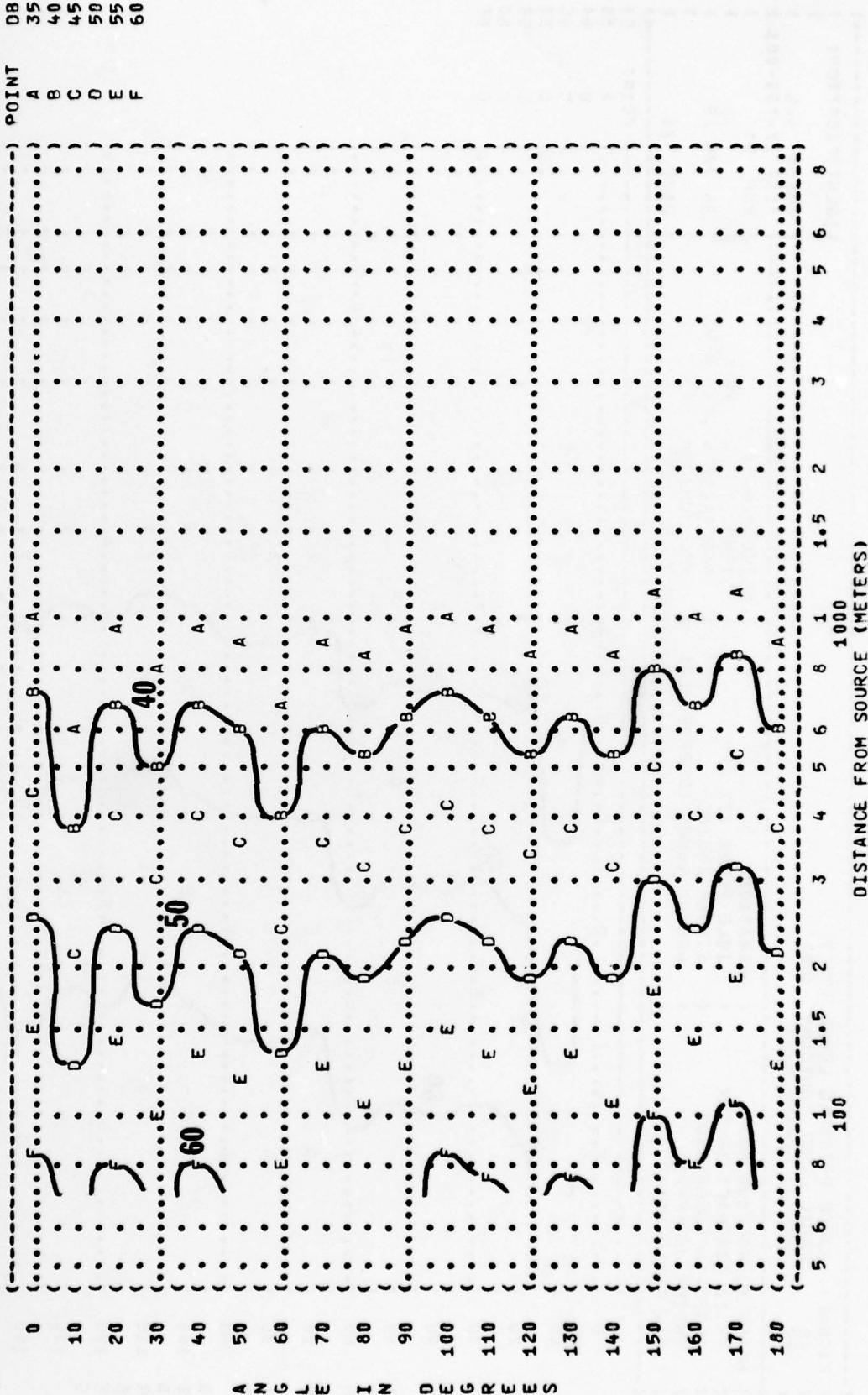


FIGURE: SOUND PRESSURE LEVEL (SPL)  
 10 EQUAL LEVEL CONTOURS (DB)  
 500 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE  
 AF 32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION: IDLE POWER 53% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

IDENTIFICATION: OMEGA 1-4  
 TEST 77-730-001  
 RUN 01  
 24 JAN 79  
 PAGE 22



( FIGURE: SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (DB)  
 1000 Hz OCTAVE BAND  
 ( NOTICE SOURCE/SUBJECT:  
 ( F-100 AIRCRAFT IN THE  
 ( AF32A-16 SUPPRESSOR  
 ( ENGINE J57-P-21  
 ( FAR FIELD NOISE

( OPERATION:  
 ( IDLE POWER 53% RPM  
 ( SINGLE ENGINE  
 ( GROUND RUNUP (SUPPRESSED)  
 ) METEOROLOGY:  
 ) TEMP = 15 C  
 ) BAR PRESS = 0.760 M HG  
 ) REL HUMID = 70 %  
 ) PAGE 23

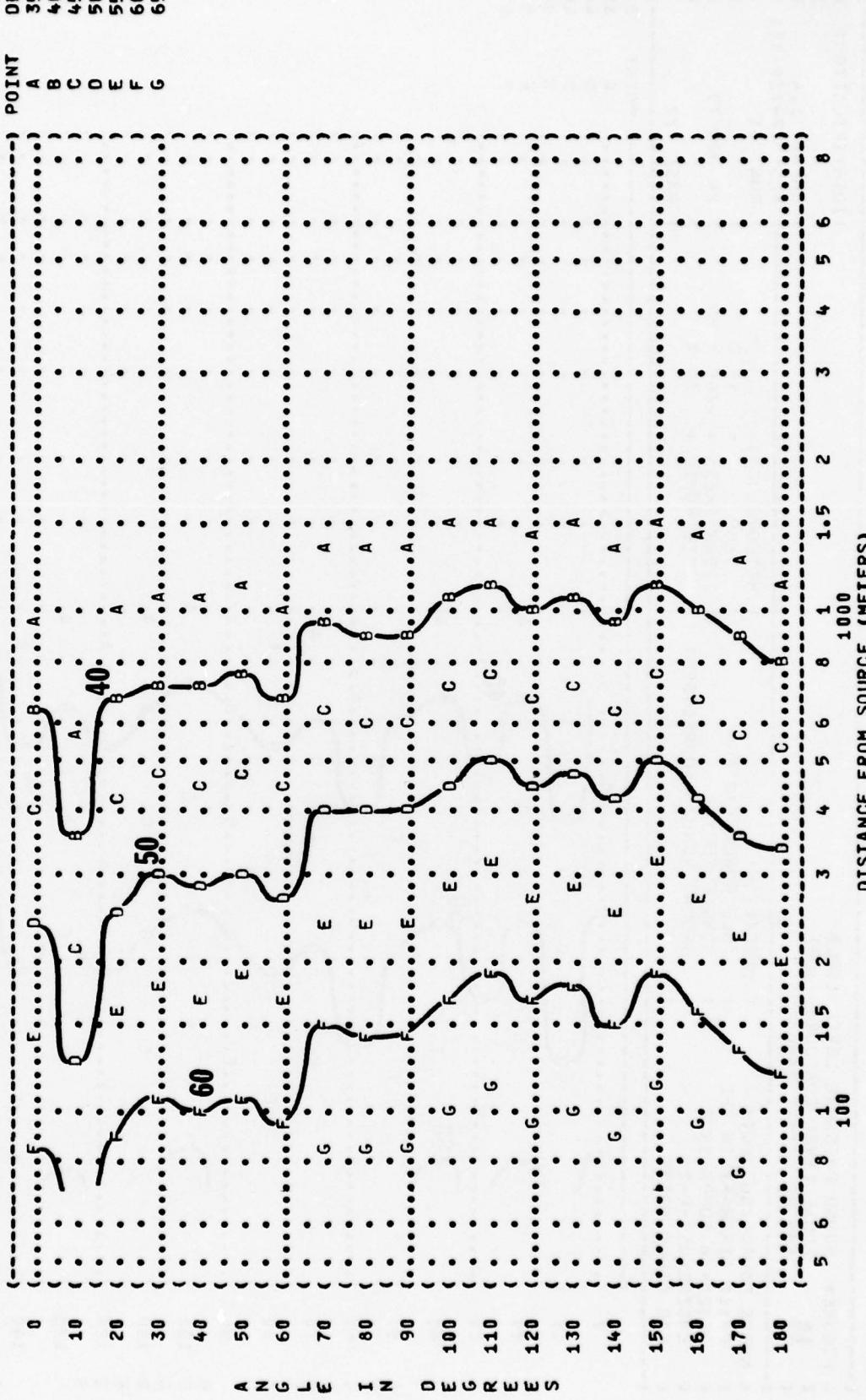


FIGURE: SOUND PRESSURE LEVEL (SPL)  
10 EQUAL LEVEL CONTOURS (DB)  
2000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE  
AF 32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
IDLE POWER 53% RPM  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

TEST 77-730-001  
RUN 01

METEOROLOGY:

TEMP = 15 C  
BAR PRESS = .760 MM HG  
REL HUMID = 70 %

PAGE 24



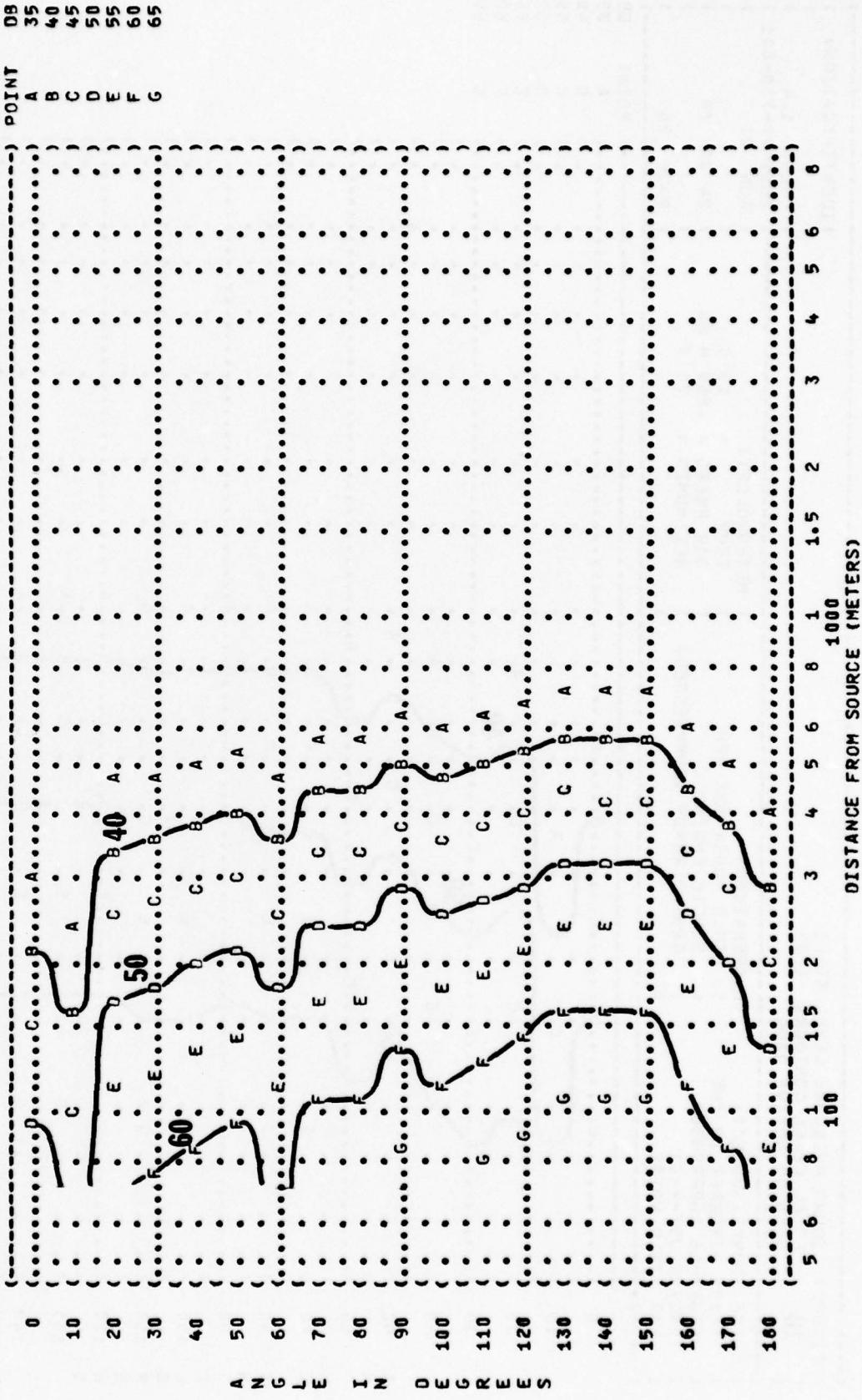
FIGURE: SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS  
 4000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 IDLE POWER 53% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 01  
 24 JAN 79  
 PAGE 25



( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 10 EQUAL LEVEL CONTOURS  
 8000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

IDENTIFICATION:  
 OMEGA 1<sup>1/4</sup>  
 TEST 77-730-001  
 RUN 01  
 PAGE 26

OPERATION:  
 IDLE POWER 53% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

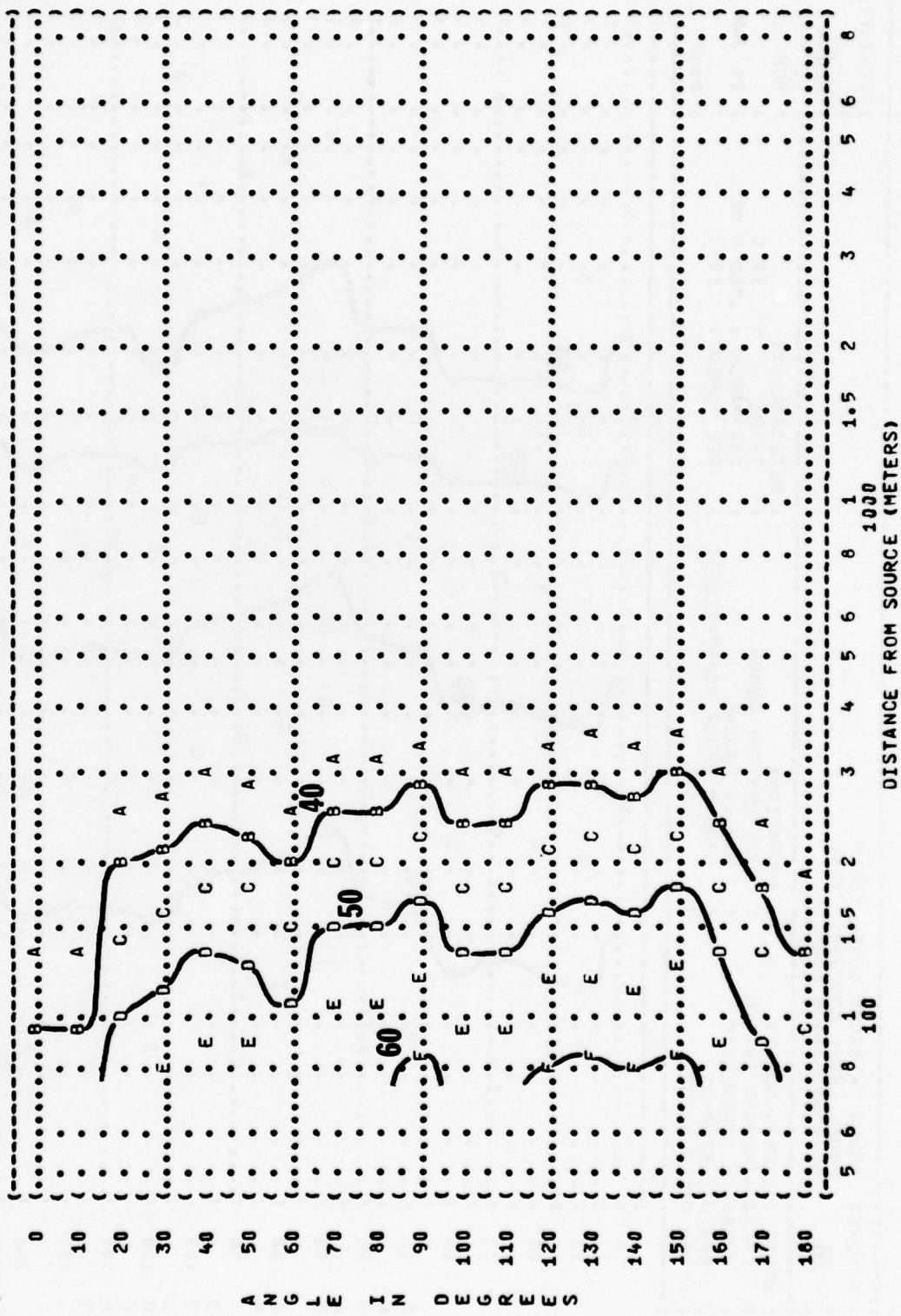




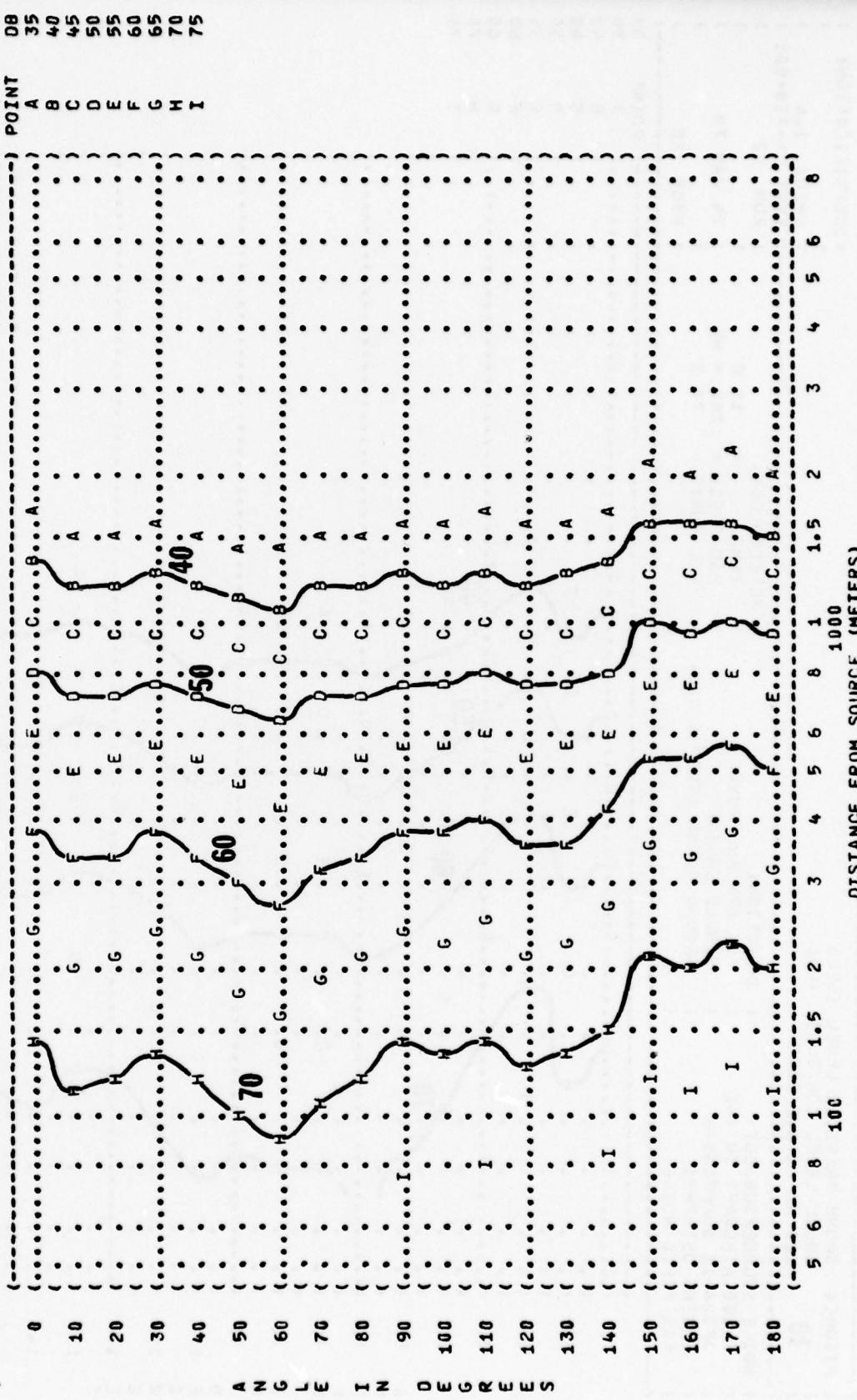
FIGURE 1 SOUND PRESSURE LEVEL (SPL)  
 10 EQUAL LEVEL CONTOURS (dB)  
 63 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 70% RPM ENG RUNUP  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 02  
 14 SEP 78  
 PAGE 19



( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( 10 EQUAL LEVEL CONTOURS (DB)  
 ( 125 Hz OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT:  
 ( F-100 AIRCRAFT IN THE  
 ( AF32A-16 SUPPRESSOR  
 ( ENGINE J57-P-21  
 ( FAR FIELD NOISE

( OPERATION:  
 ( 70% RPM ENG RUNUP  
 ( SINGLE ENGINE  
 ( GROUND RUNUP (SUPPRESSED)  
 ) METEOROLOGY1  
 ) TEMP = 15 C  
 ) BAR PRESS = .760 M HG  
 ) REL HUMID = 70 %  
 ) TEST 77-730-001  
 ) RUN 02  
 ) 24 JAN 79  
 ) PAGE 29

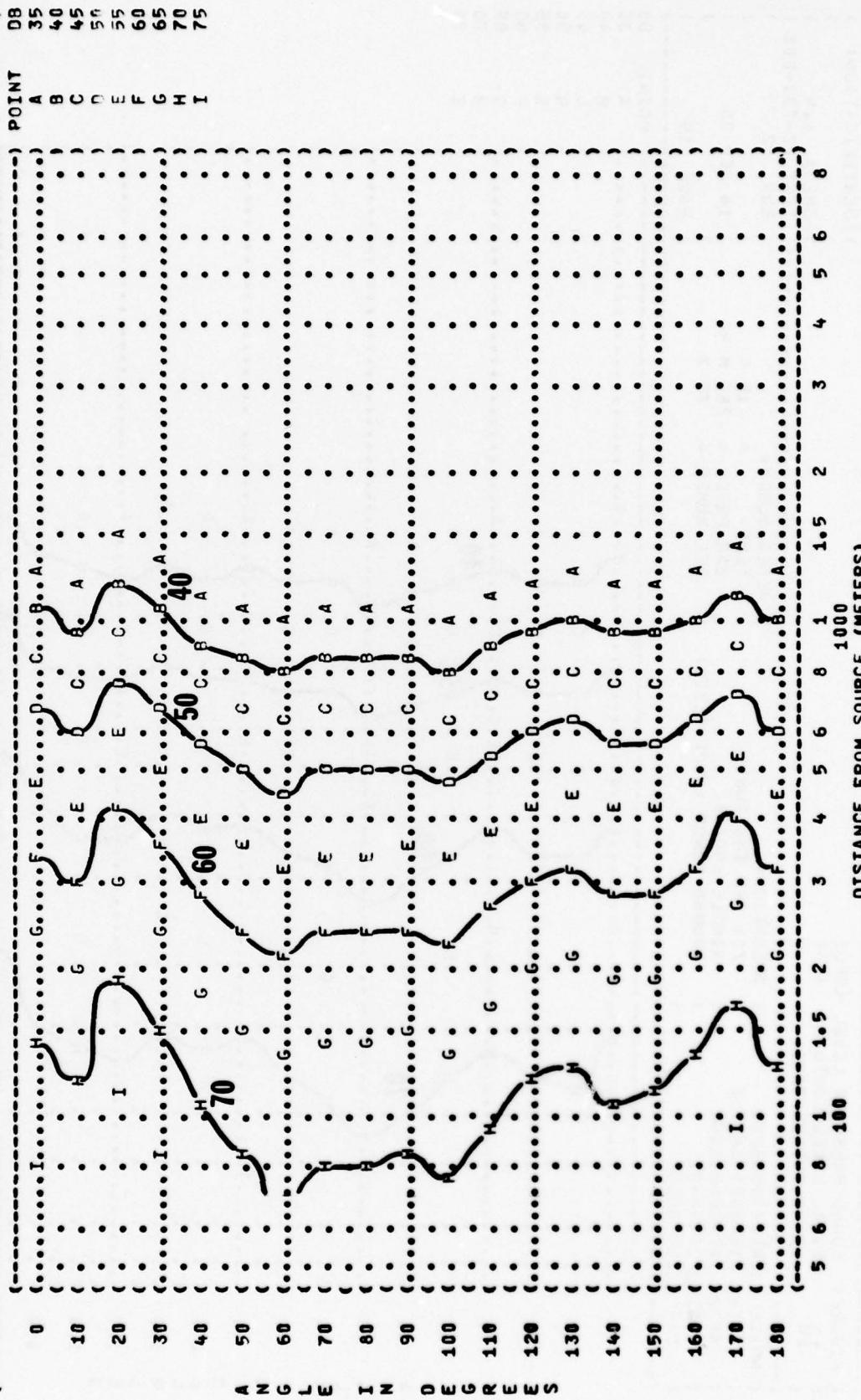


FIGURE 8 SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (DB)  
 250 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 70% RPM ENG RUNUP  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

PAGE 21

IDENTIFICATION:  
 OMEGA 1<sup>04</sup>  
 TEST 77-730-001  
 RUN 02

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 HG  
 REL HUMID = 70 %

PAGE 21

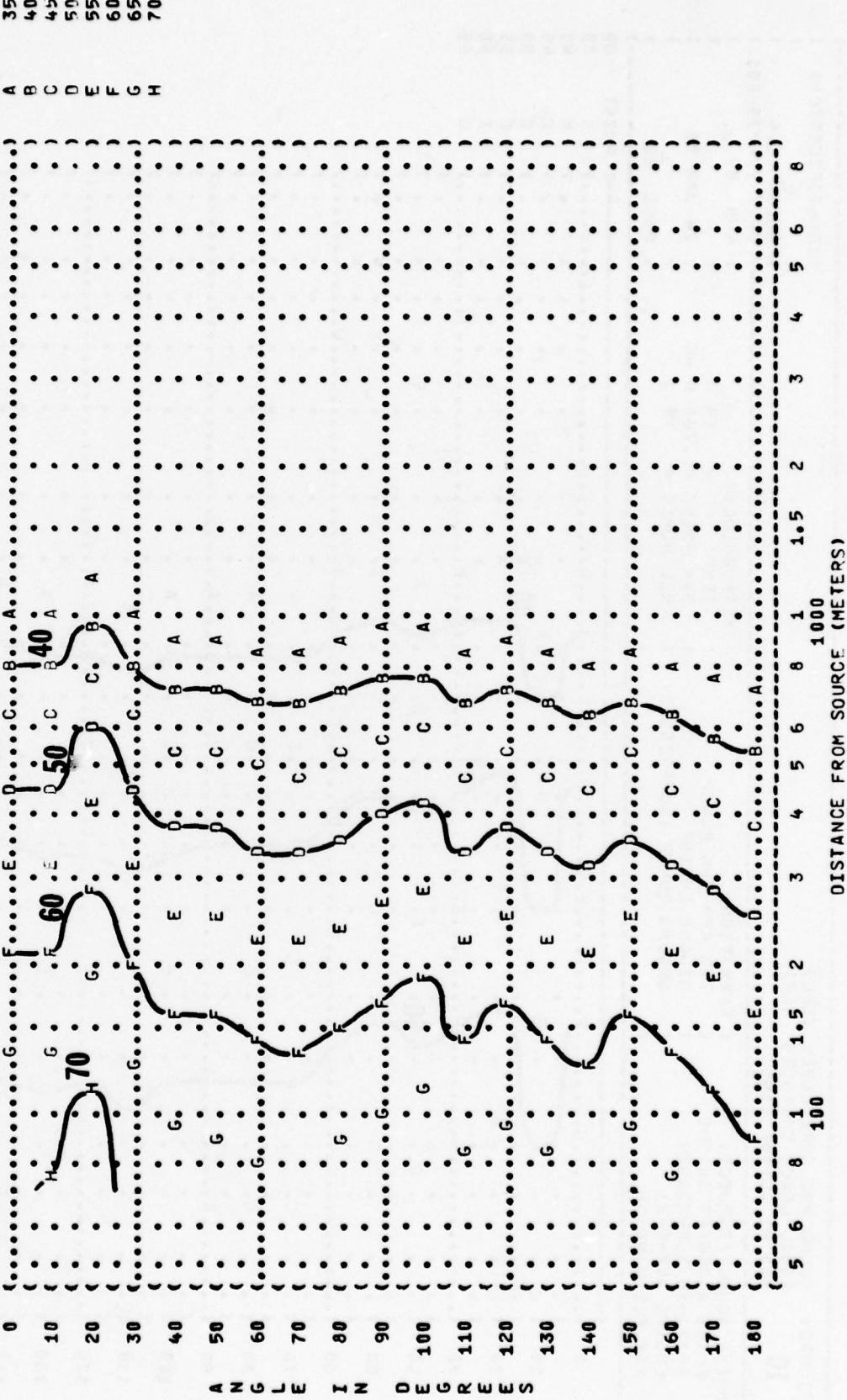




FIGURE: SOUND PRESSURE LEVEL (SPL)  
EQUAL LEVEL CONTOURS (0B)  
10 1000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
70% RPM ENG RUNUP  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
TEMP = 15 C  
BAR PRESS = .760 Hg  
REL HUMID = 70 %

TEST 77-730-001  
RUN 02  
24 JAN 79  
PAGE 23

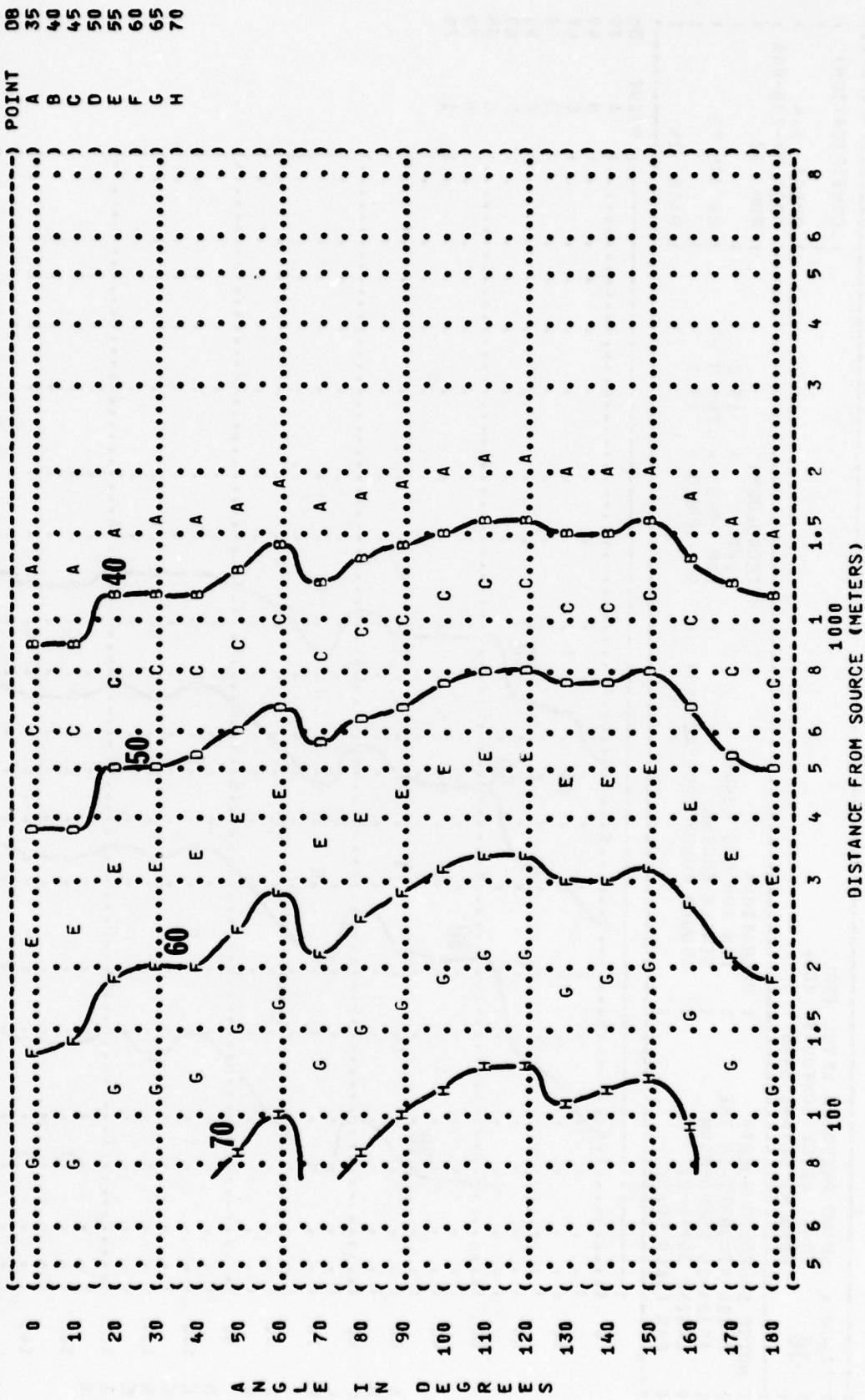


FIGURE: SOUND PRESSURE LEVEL (SPL)  
10 EQUAL LEVEL CONTOURS (DB)  
2000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
( 70% RPM ENG RUNUP  
( SINGLE ENGINE  
( GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
( TEMP = 15°C  
( BAR PRESS = 0.760 MM HG  
( REL HUMID = 70%

TEST 77-730-001  
RUN 02  
24 JAN 79  
PAGE 24

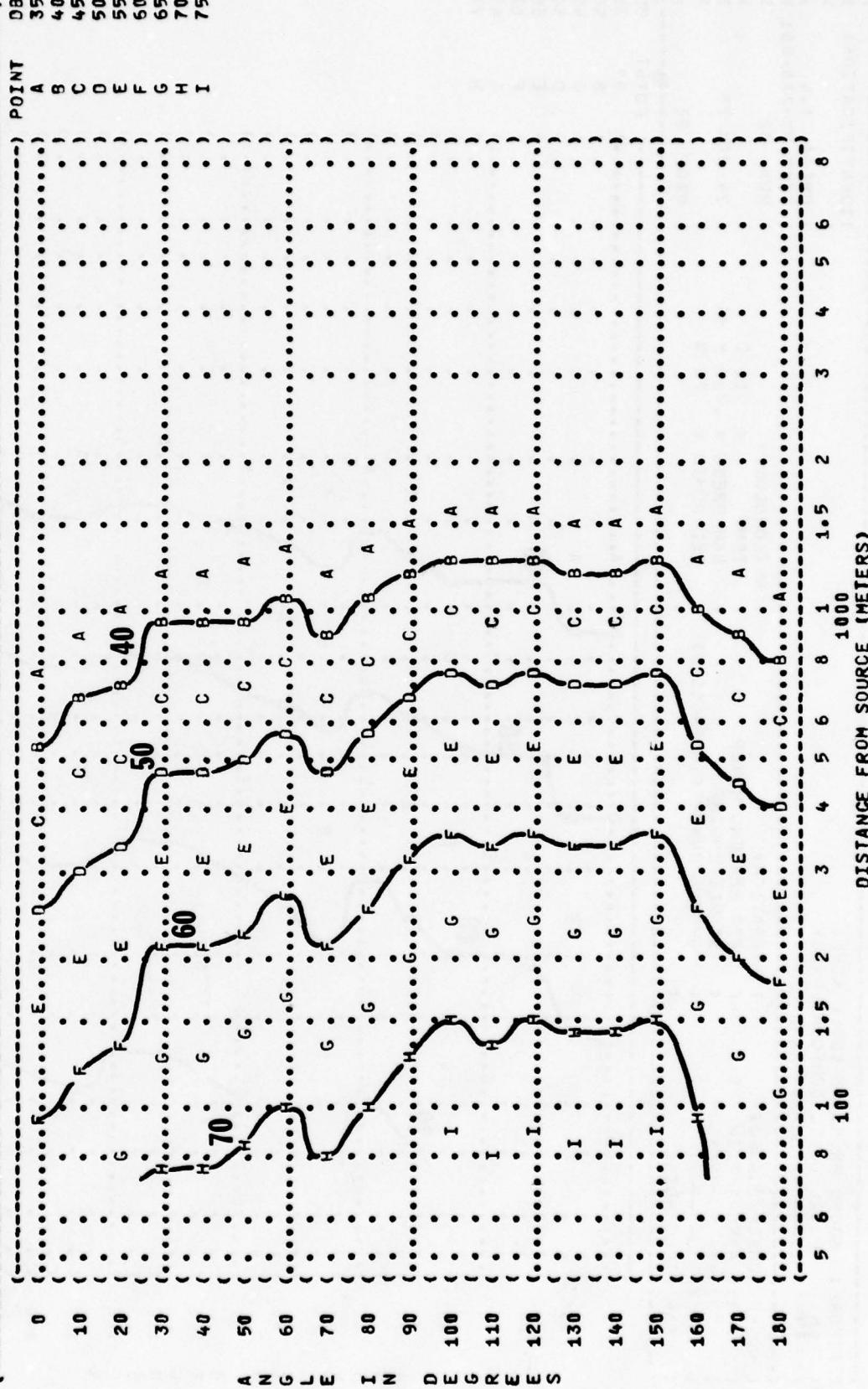
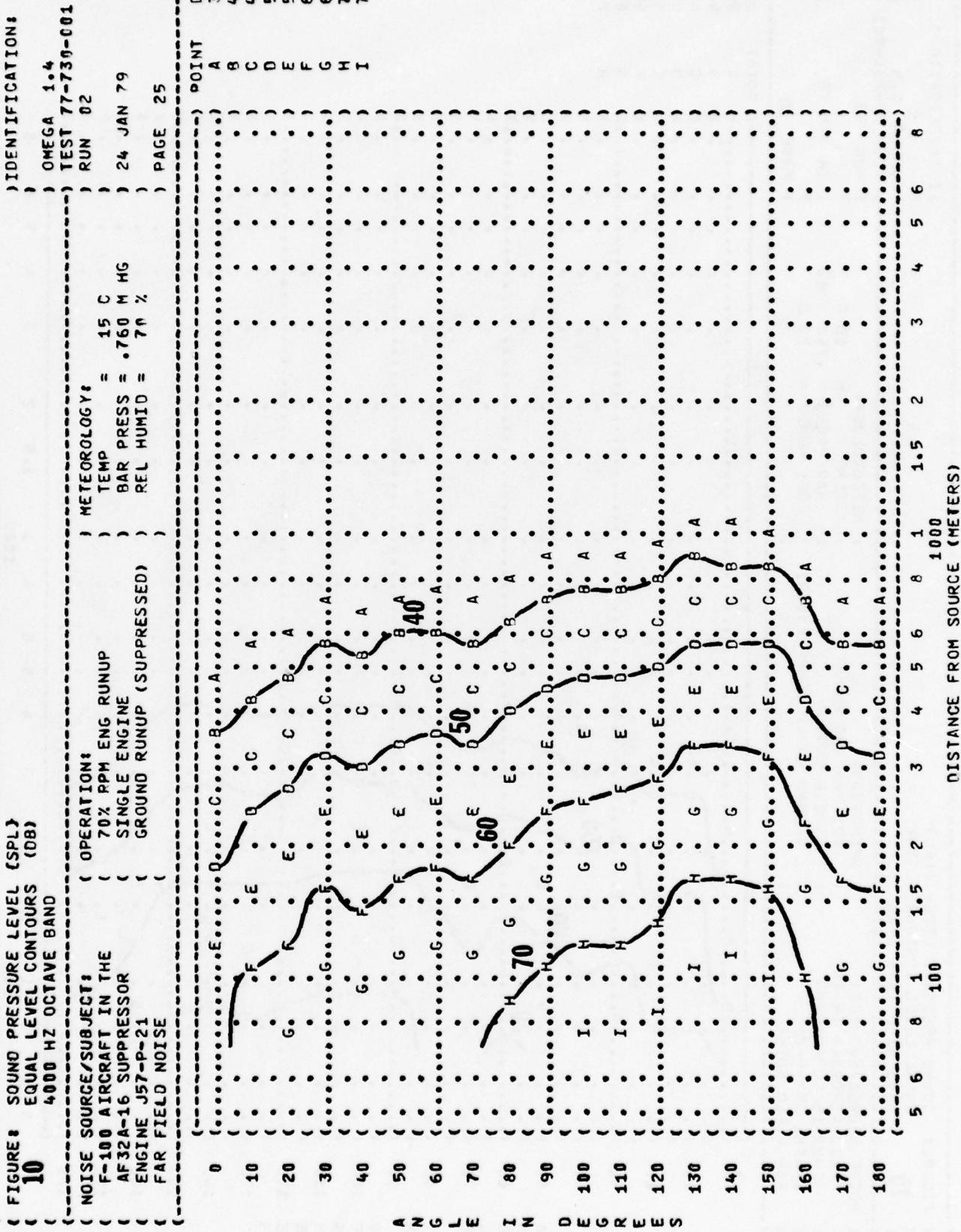


FIGURE: SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS  
 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE



( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( EQUAL LEVEL CONTOURS (DB)  
**10** 8000 Hz OCTAVE BAND

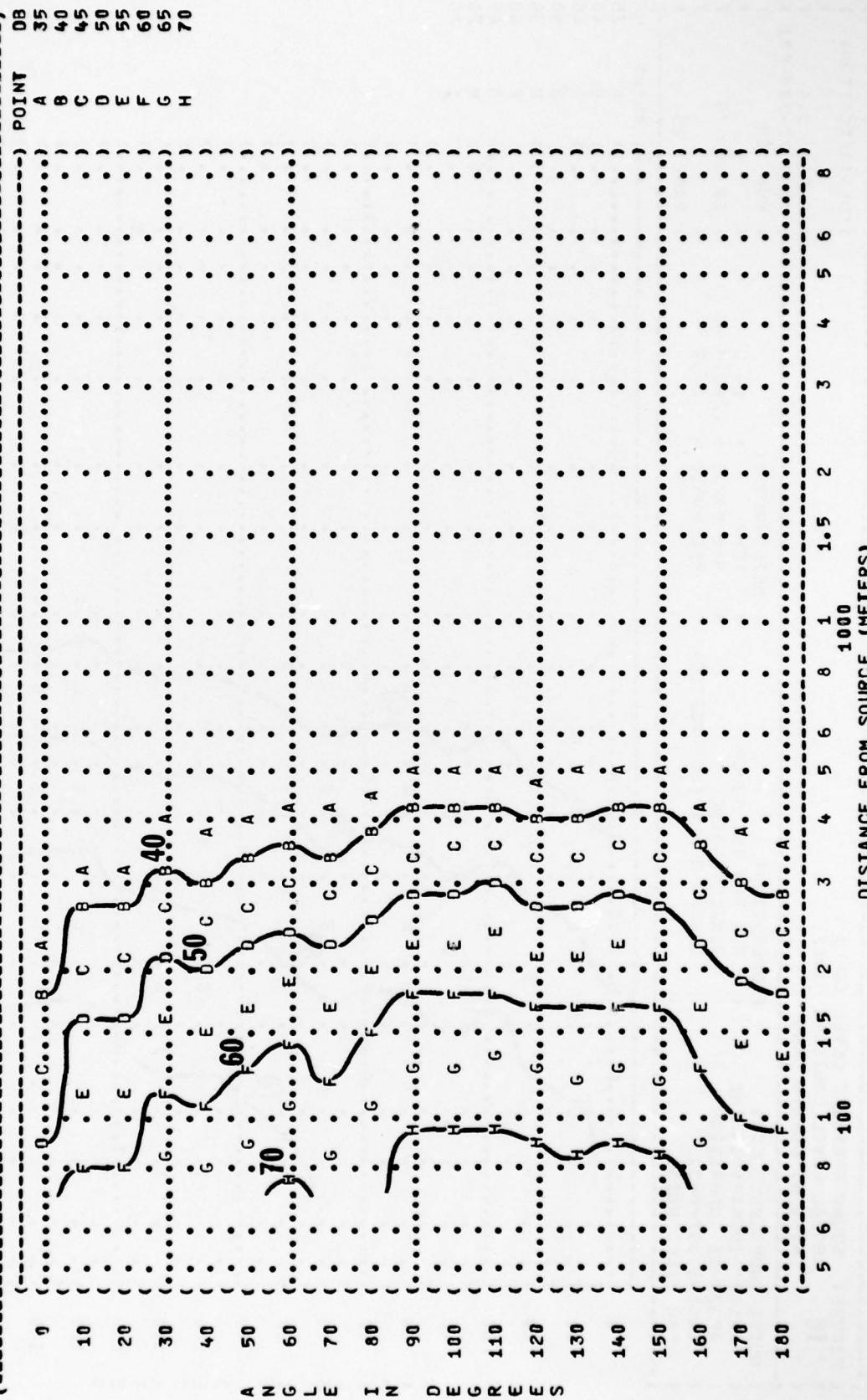
( NOISE SOURCE/SUBJECT:  
 ( F-100 AIRCRAFT IN THE  
 ( AF 32A-16 SUPPRESSOR  
 ( ENGINE J57-P-21  
 ( FAR FIELD NOISE

) IDENTIFICATION:  
 ) OMEGA 1-4  
 ) TEST 77-730-001  
 ) RUN 02

) OPERATION:  
 ( 70X RPM ENG RUNUP  
 ( SINGLE ENGINE  
 ( GROUND RUNUP (SUPPRESSED)

) METEOROLOGY:  
 ) TEMP = 15 °C  
 ) BAR PRESS = .760 M HG  
 ) REL HUMID = 70 %

) PAGE 26



( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( EQUAL LEVEL CONTOURS (DB)  
**10**  
 31.5 Hz OCTAVE BAND

( NOISE SOURCE/SUBJECT:  
 ( F-100 AIRCRAFT IN THE  
 ( AF32A-16 SUPPRESSOR  
 ( ENGINE J57-P-21  
 ( FAR FIELD NOISE

( OPERATION:  
 ( MILITARY POWER 97% RPM  
 ( SINGLE ENGINE  
 ( GROUND RUNUP (SUPPRESSED)

) METEOROLOGY:  
 ) TEMP = 15 C  
 ) BAR PRESS = .760 M HG  
 ) REL HUMID = 70 %

) TEST 77-730-001  
 ) RUN 03  
 ) 24 JAN 79  
 ) PAGE 18

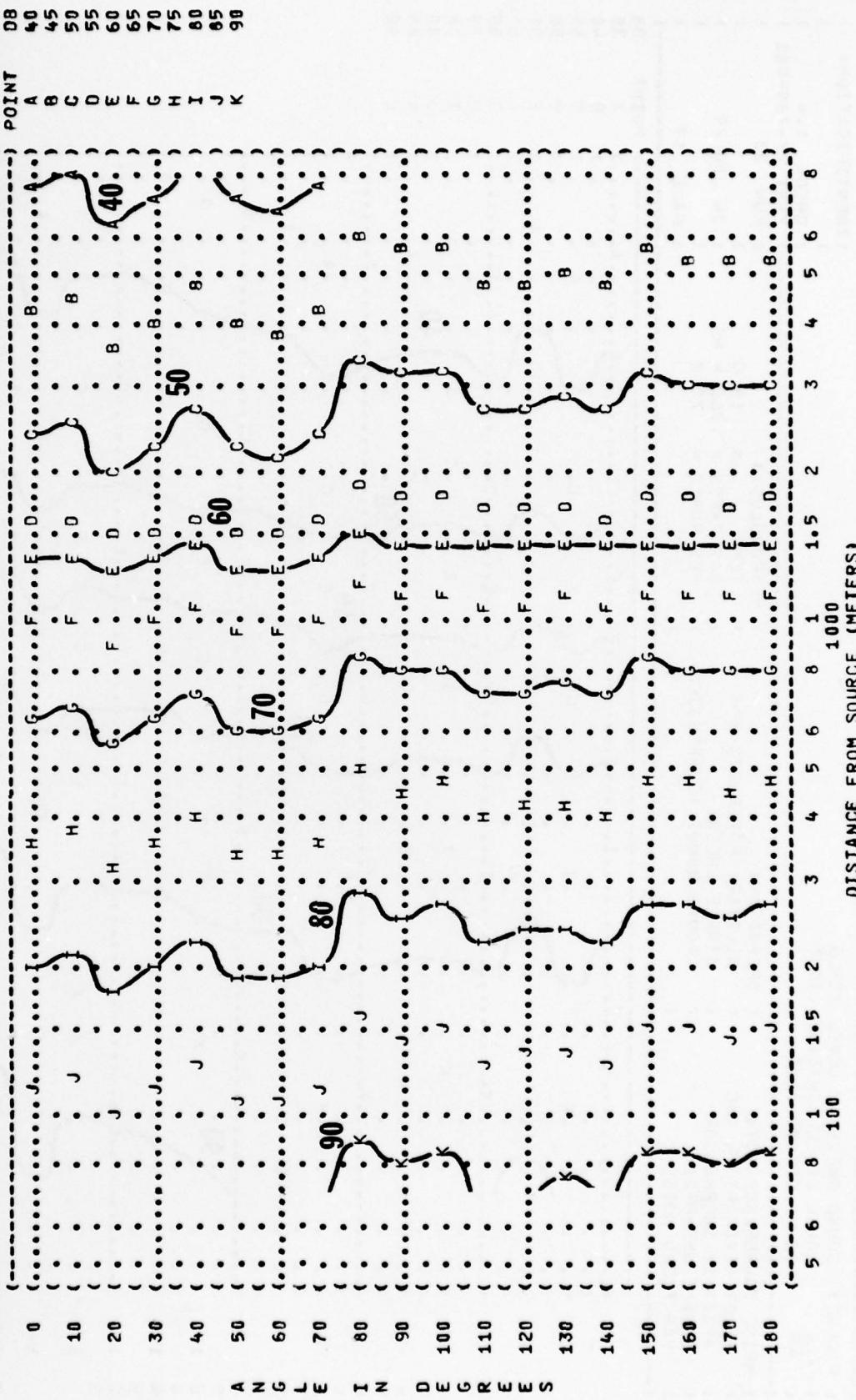


FIGURE: SOUND PRESSURE LEVEL (SPL)  
EQUAL LEVEL CONTOURS (DB)  
**10**  
63 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
MILITARY POWER 97% RPM  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
TEMP = 15 C  
BAR PRESS = .760 HG  
REL HUMID = 70 %

TEST 77-739-001  
RUN 03  
24 JAN 79  
PAGE 19

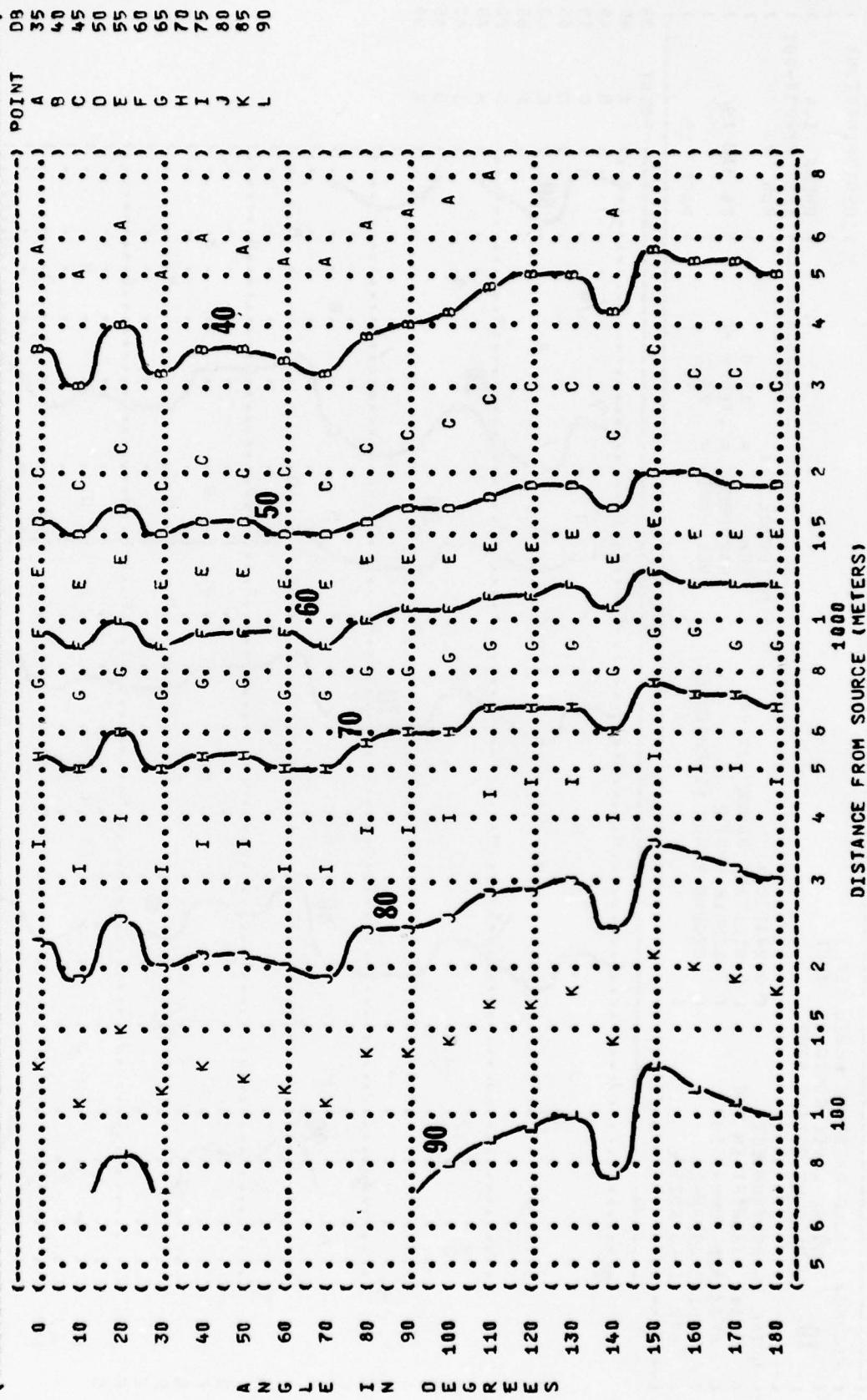


FIGURE: SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (DB)  
 125 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION: MILITARY POWER 97% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY: TEMP = 15 C  
 BAR PRESS = .760 HG  
 REL HUMID = 70 %

IDENTIFICATION: OMEGA 1.4  
 TEST 77-730-001  
 RUN 03  
 PAGE 20

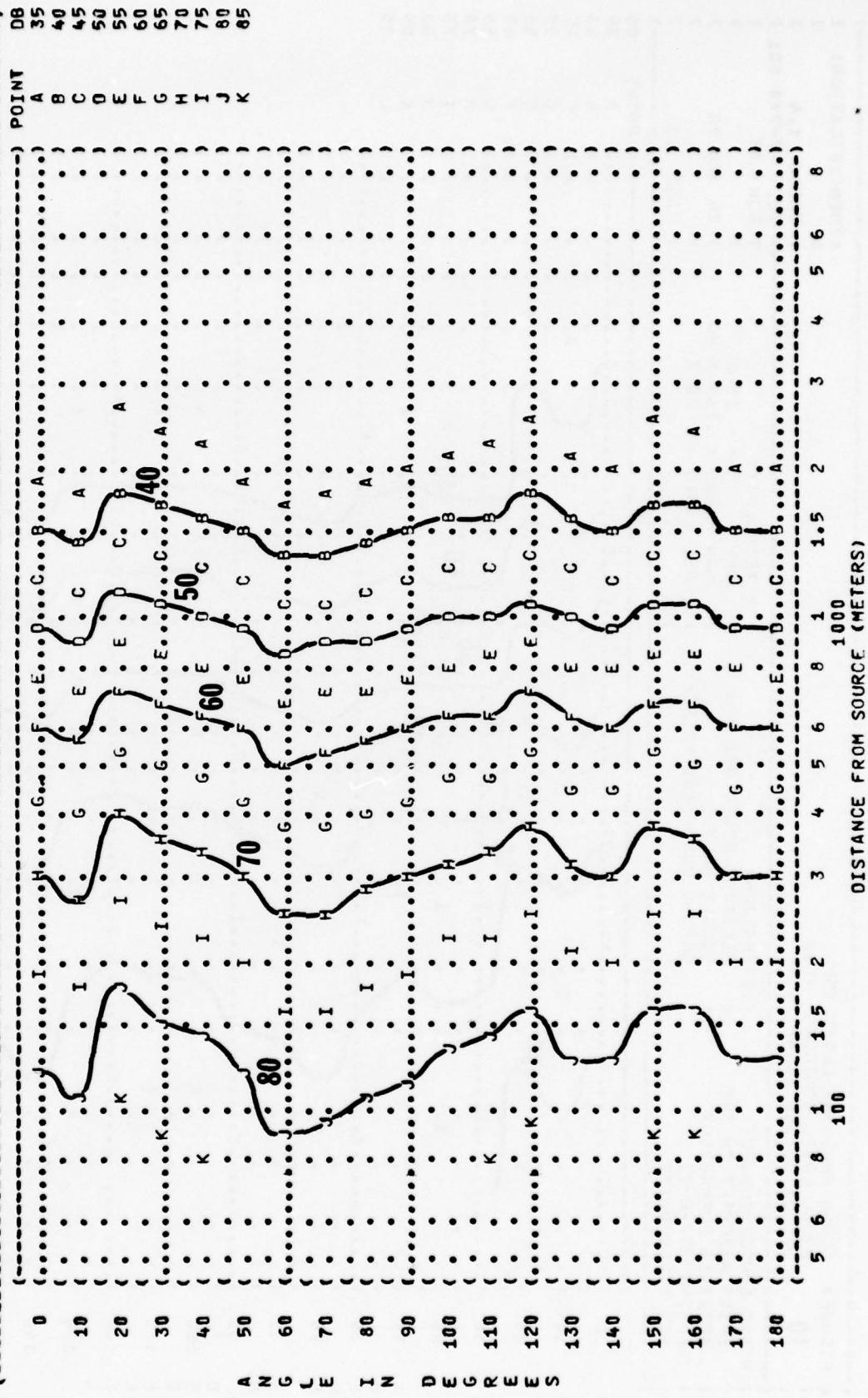


FIGURE: SOUND PRESSURE LEVEL (SPL)  
 10 EQUAL LEVEL CONTOURS (DB)  
 250 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 MILITARY POWER 97% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = 760 Hg  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 03  
 PAGE 21

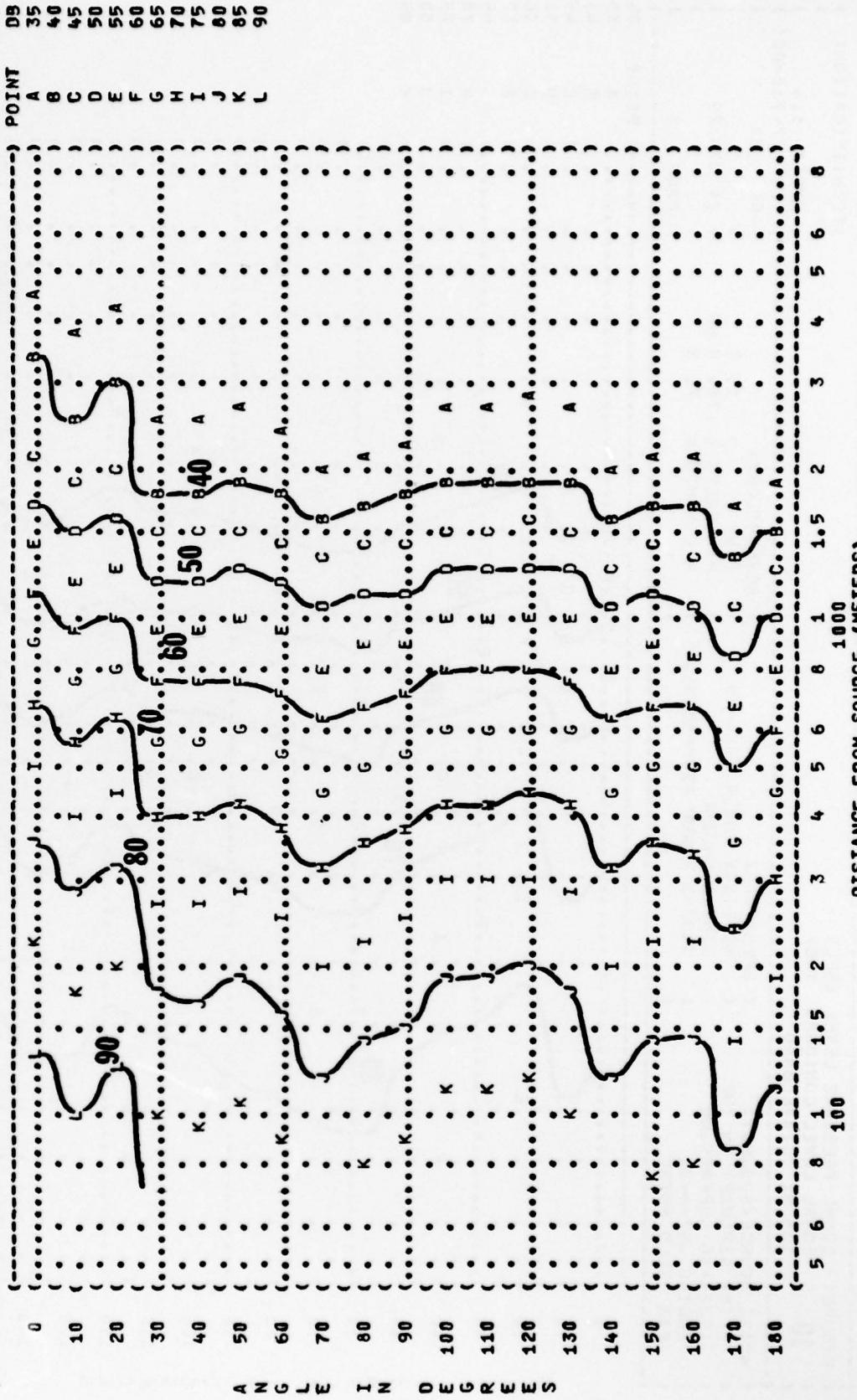


FIGURE 10  
SOUND PRESSURE LEVEL (SPL)  
EQUAL LEVEL CONTOURS (0B)  
500 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT: F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION: MILITARY POWER 97% RPM  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

IDENTIFICATION:  
OMEGA 10<sup>4</sup>  
TEST 77-730-001  
RUN 03  
24 JAN 79  
PAGE 22

METEOROLOGY:  
TEMP = 15 C  
BAR PRESS = .760 MG  
REL HUMID = 70 %

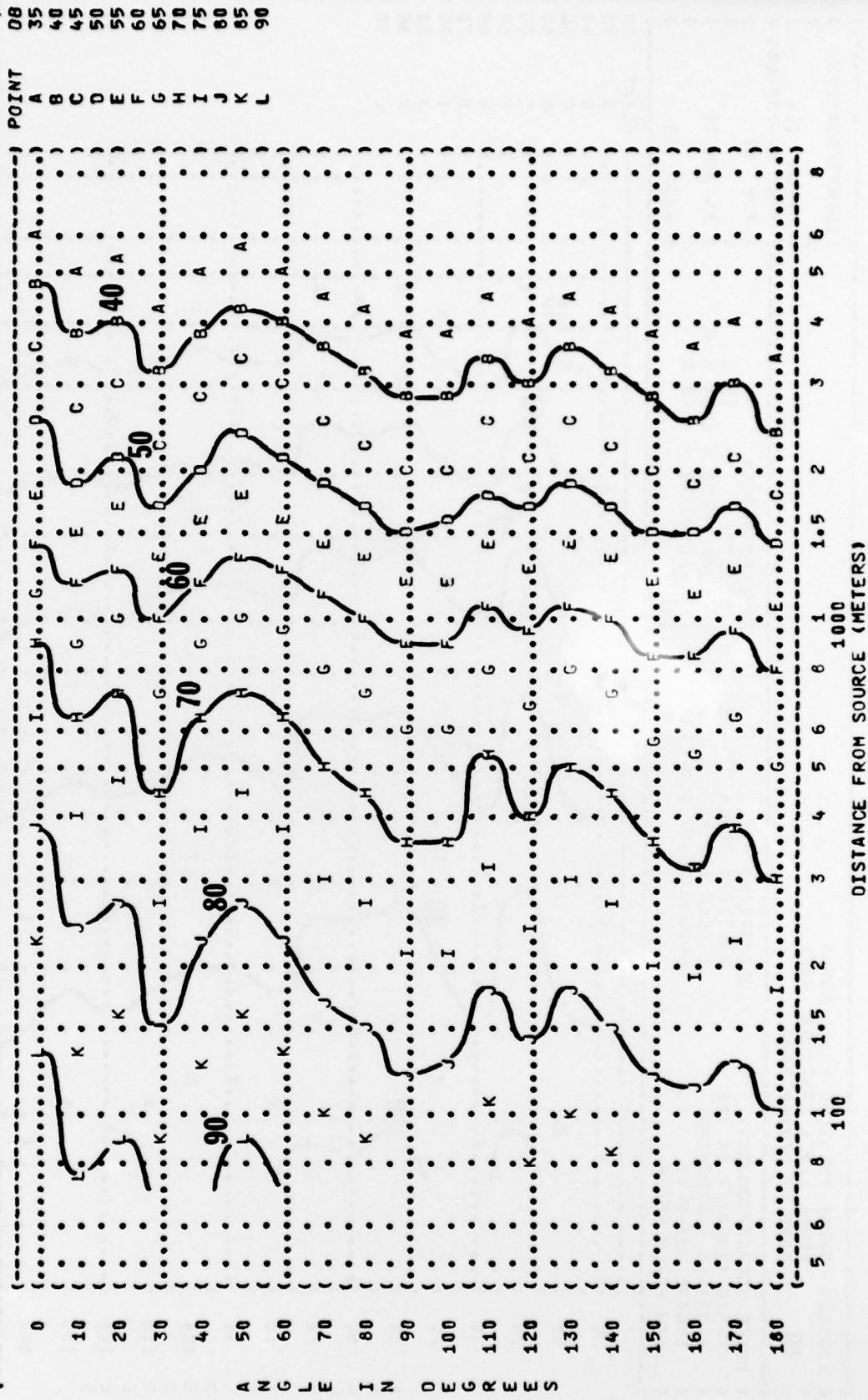


FIGURE: SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (dB)  
1000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
MILITARY POWER 97% RPM  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
TEMP = 15°C  
BAR PRESS = 0.760 Hg  
REL HUMID = 70%

TEST 77-730-001  
RUN 93  
24 JAN 79  
PAGE 23

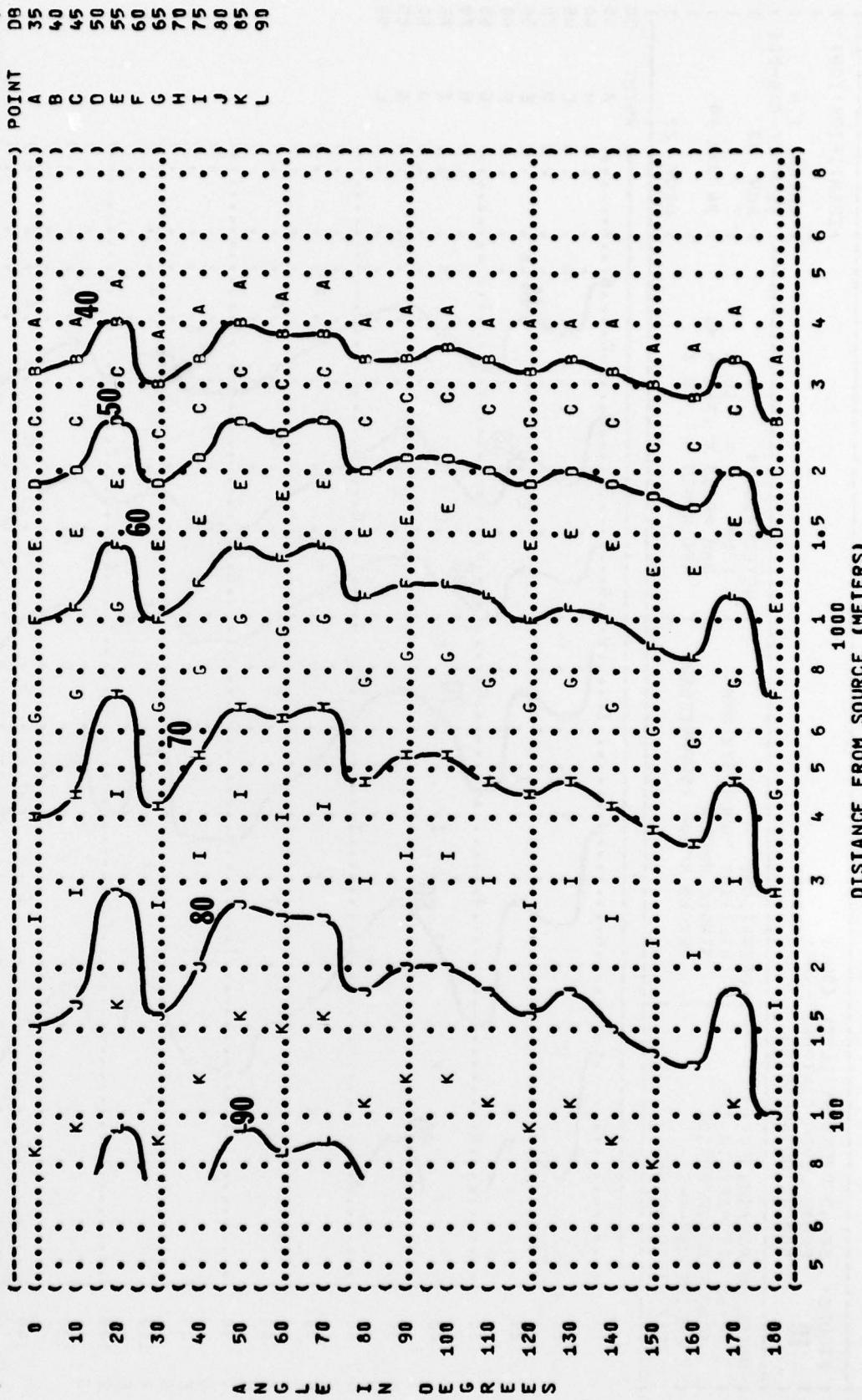


FIGURE 10 SOUND PRESSURE LEVEL (SPL)  
EQUAL LEVEL CONTOURS (0DB)  
2000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
MILITARY POWER 97% RPM  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
TEMP = 15 C  
BAR PRESS = 760 M HG  
REL HUMID = 70 %  
TEST 77-730-001  
RUN 03  
PAGE 24

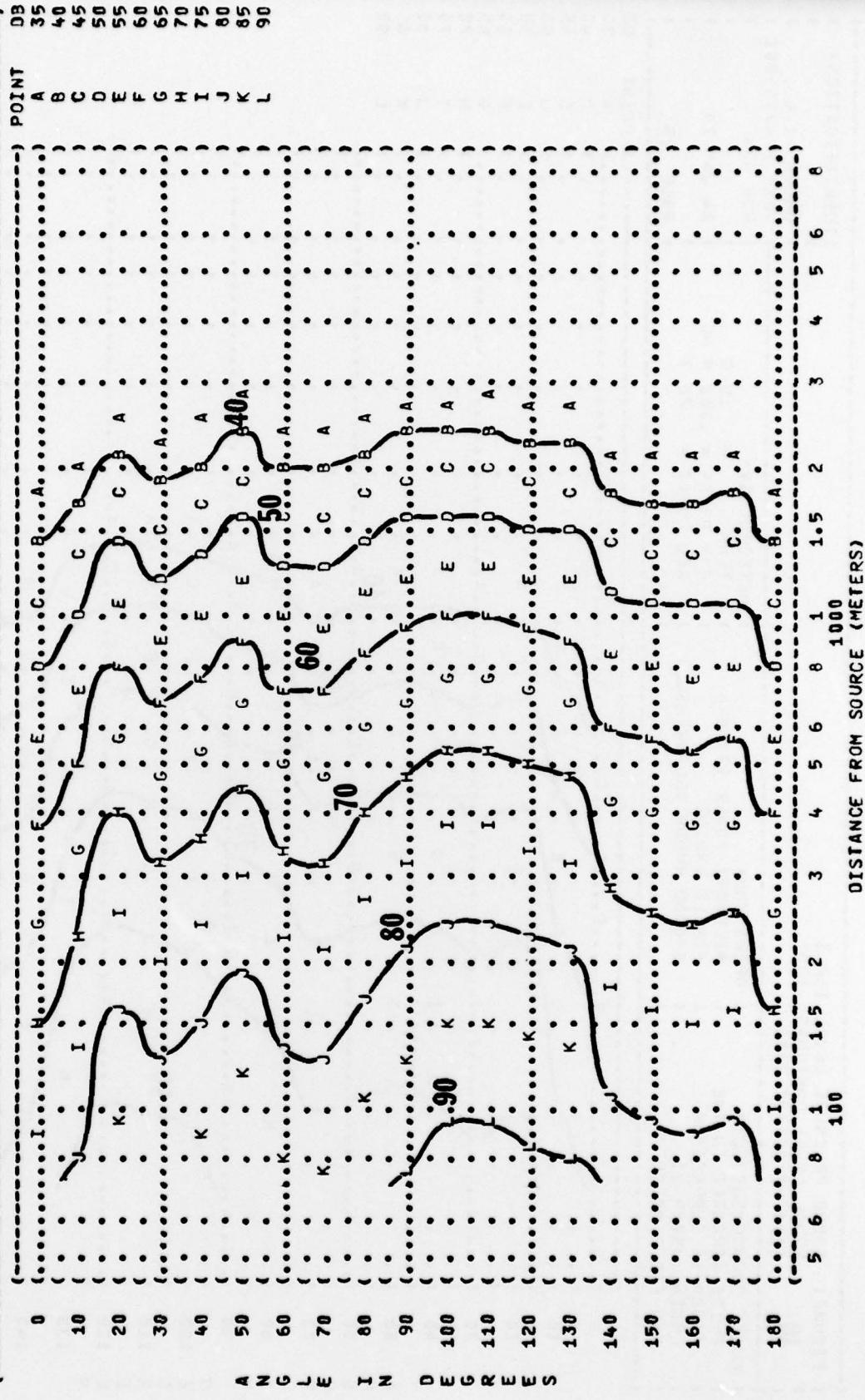


FIGURE: SOUND PRESSURE LEVEL (SPL)  
 10 EQUAL LEVEL CONTOURS (DB)  
 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 MILITARY POWER 97% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 03  
 24 JAN 79  
 PAGE 25

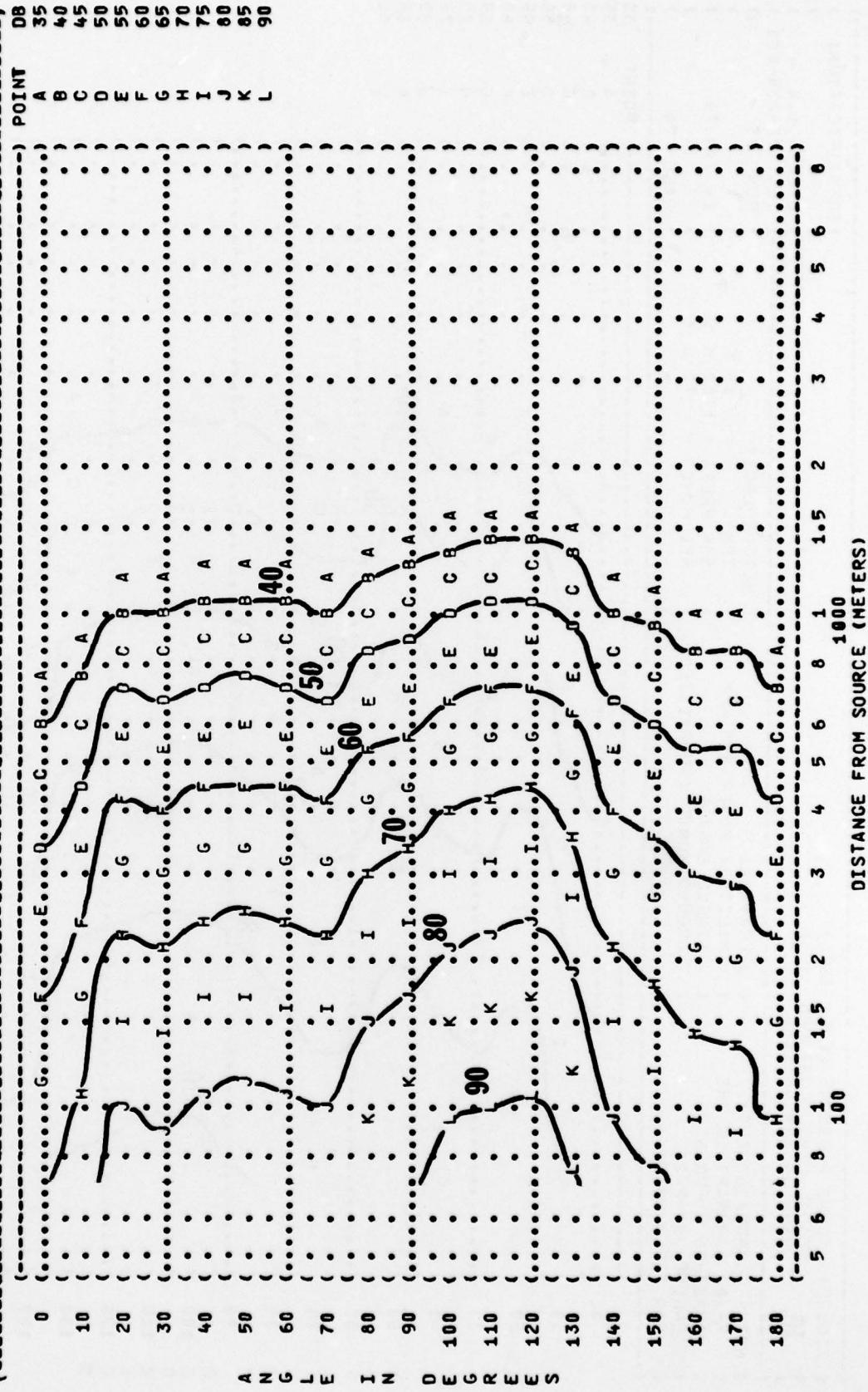


FIGURE: SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (dB)  
 8000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF 32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 MILITARY POWER 97% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = 760 M HG  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 03  
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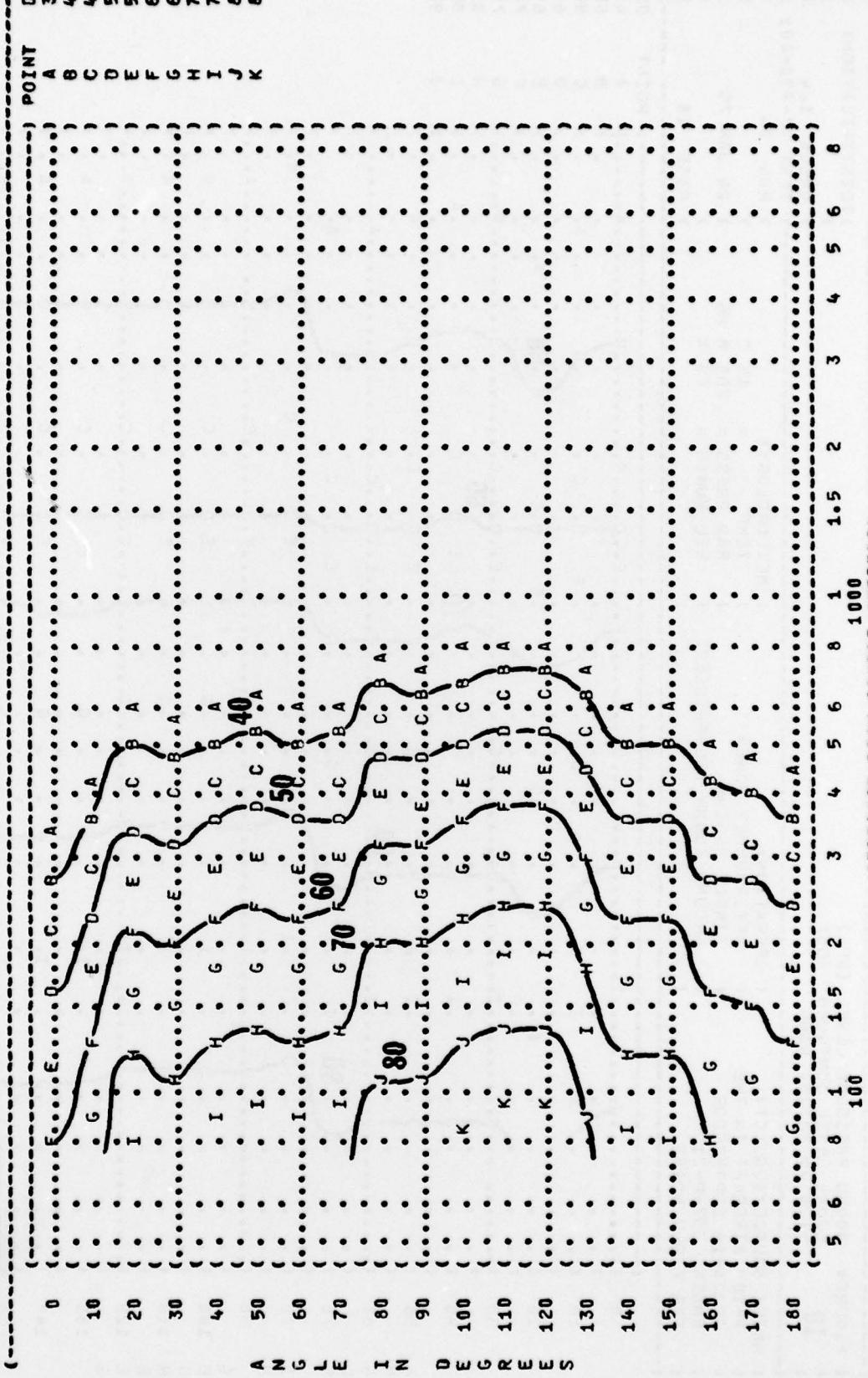


FIGURE: SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (DB)  
 31.5 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION:  
 AFTERBURNER POWER  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

TEST 77-730-001  
 RUN 04  
 24 JAN 79  
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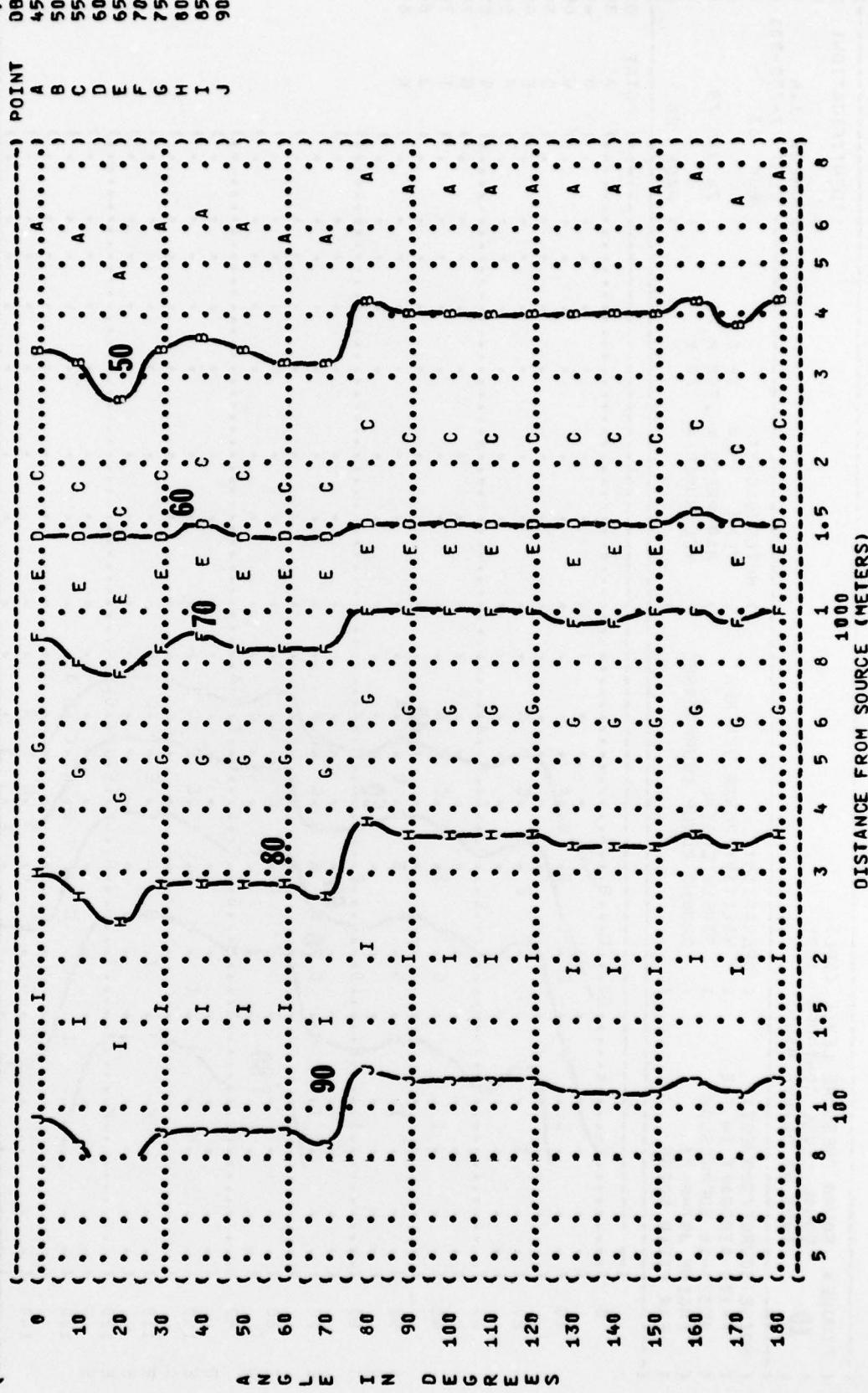


FIGURE 3 SOUND PRESSURE LEVEL (SPL)  
10 EQUAL LEVEL CONTOURS (DB)  
63 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
AFTERBURNER POWER  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

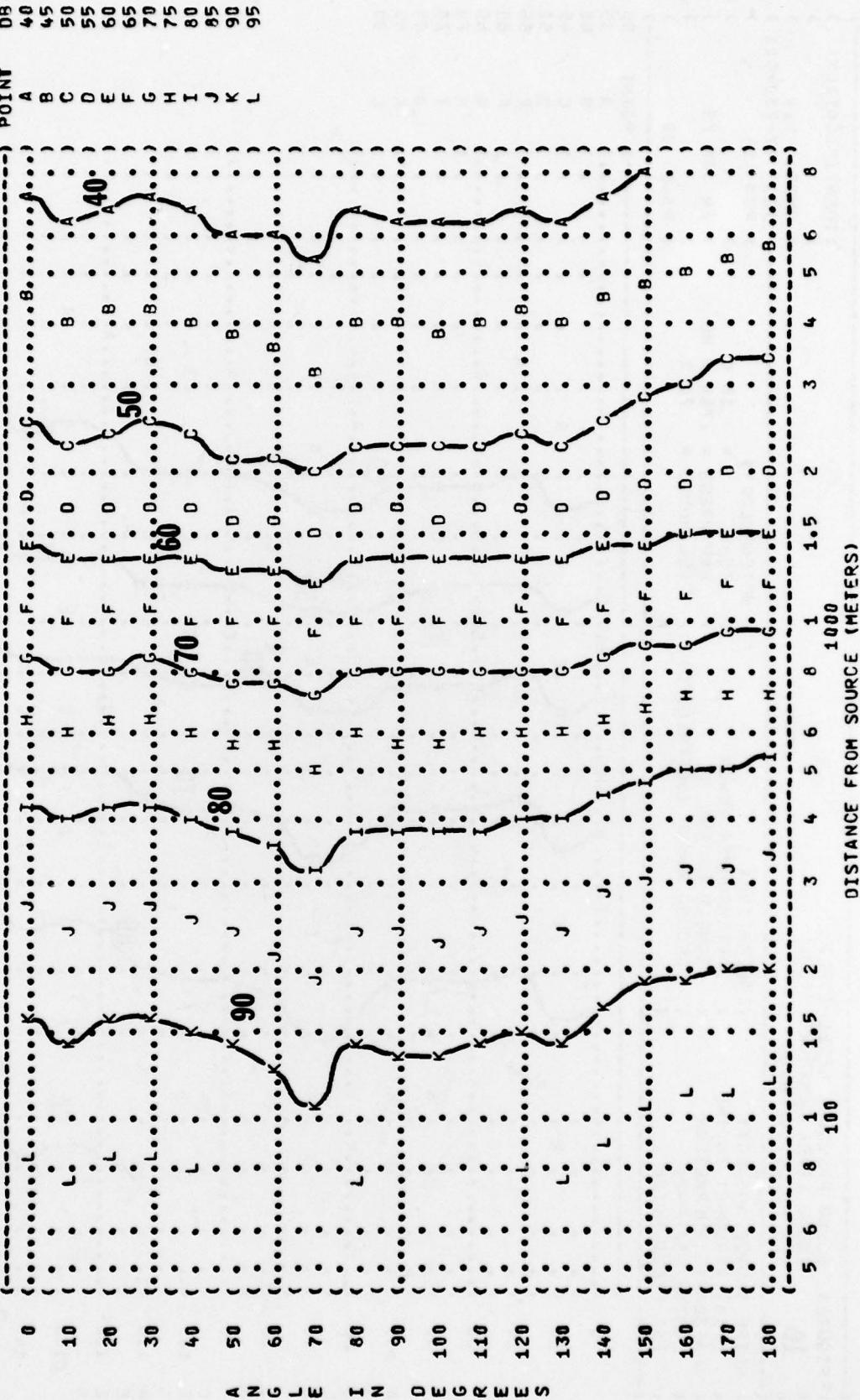


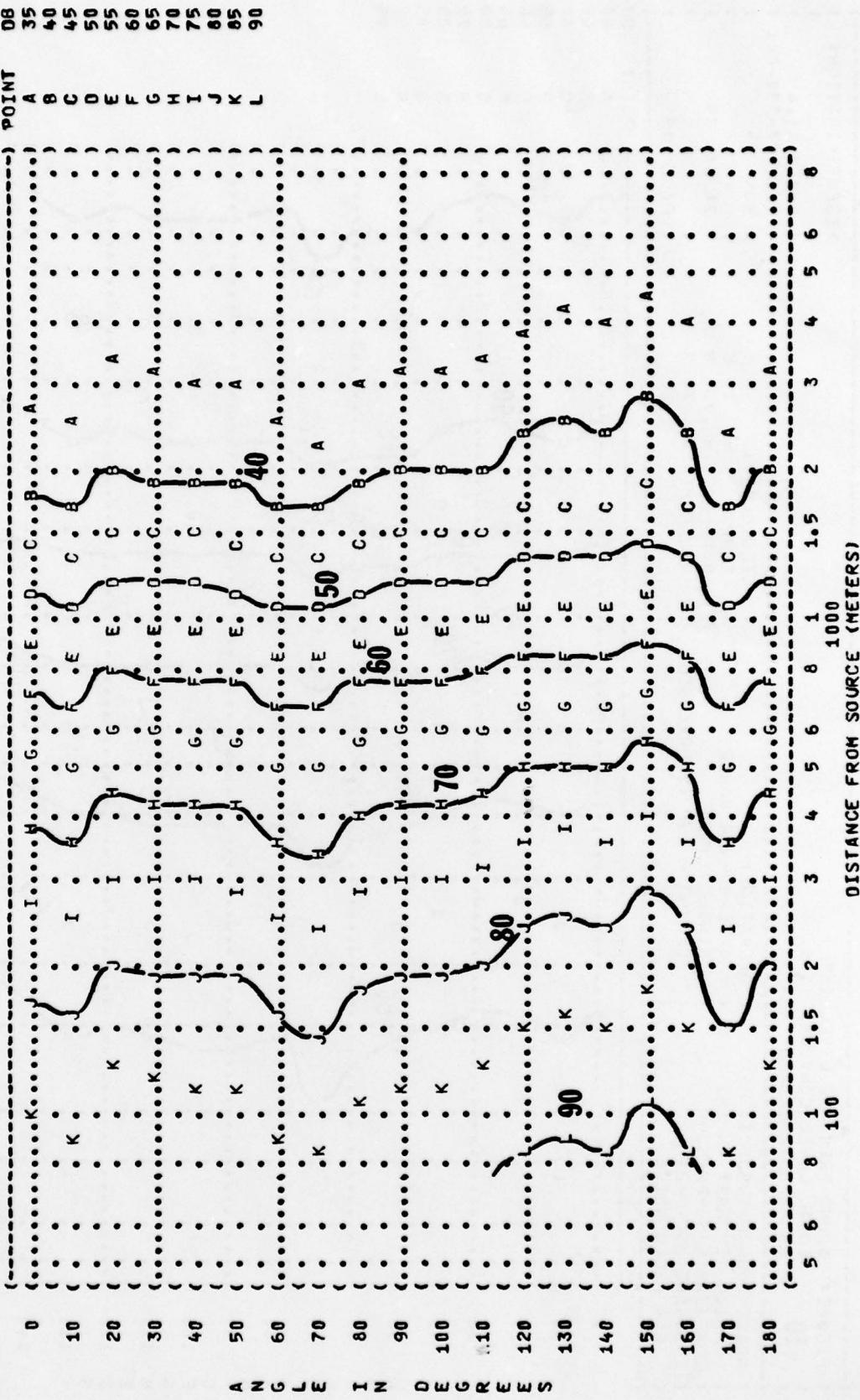
FIGURE 10 SOUND PRESSURE LEVEL (SPL)  
10 EQUAL LEVEL CONTOURS  
125 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
F-100 AIRCRAFT IN THE  
AF32A-16 SUPPRESSOR  
ENGINE J57-P-21  
FAR FIELD NOISE

OPERATION:  
AFTERSURNER POWER  
SINGLE ENGINE  
GROUND RUNUP (SUPPRESSED)

METEOROLOGY:  
TEMP = 15 C  
BAR PRESS = 760 MM HG  
REL HUMID = 70 %

IDENTIFICATION:  
OMEGA 1-4  
TEST 77-730-001  
RUN 04  
24 JAN 79  
PAGE 20



**FIGURE 10** SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 250 Hz OCTAVE BAND

FIGURE : SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (DB)  
 250 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT : F-100 AIRCRAFT IN THE  
 AF32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATION : AFTERBURNER POWER  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

IDENTIFICATION : OMEGA 1.4  
 TEST 77-730-001  
 RUN 04

METEOROLOGY : TEMP = 15 C  
 BAR PRESS = 760 M HG  
 REL HUMID = 70 %

JAN 79

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POINT

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

DISTANCE FROM SOURCE (METERS)

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

40

50

60

70

80

90

A B C D E F G H I J K L M N O P Q R

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

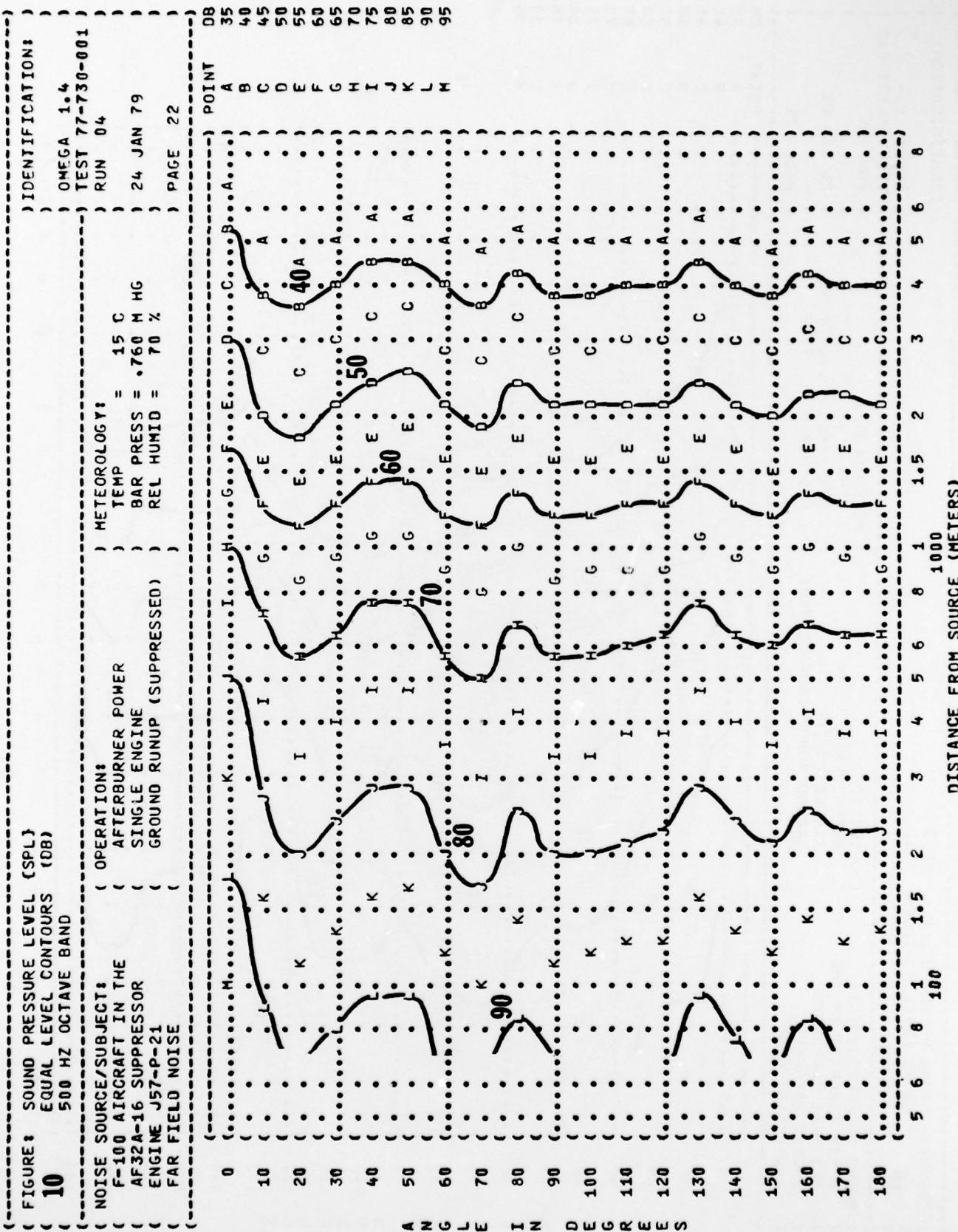


FIGURE 10. SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB).

NO. 106 SOURCE/SUBJECT: F-100 AIRCRAFT IN THE AF 12A-16 SUPPRESSOR ENGINE JS7-P-21 FAR FIELD NOISE

) IDENTIFICATION:  
 )  
 ) OMEGA 1<sup>4</sup>  
 ) TEST 77-730-001  
 ) RUN 04  
 )  
 ) METEOROLOGY:  
 ) TEMP = 15 C  
 ) BAR PRESS = 760 M HG  
 ) REL HUMID = 70 %  
 )  
 ) POWER  
 ) (SUPPRESSED)  
 )  
 ) PAGE 23

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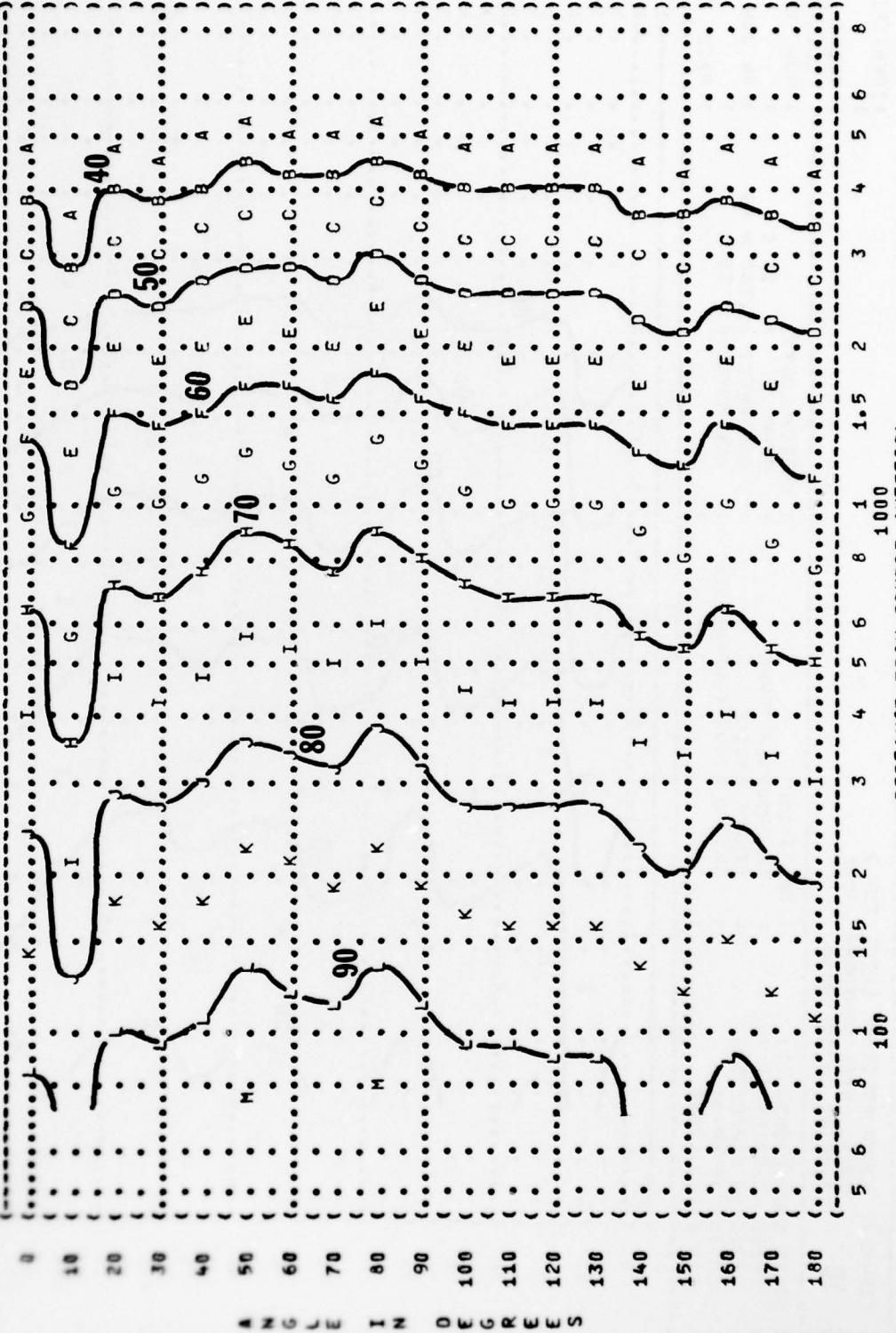


FIGURE 10  
SOUND PRESSURE LEVEL (SPL)  
EQUAL LEVEL CONTOURS (dB)  
2000 Hz OCTAVE BAND

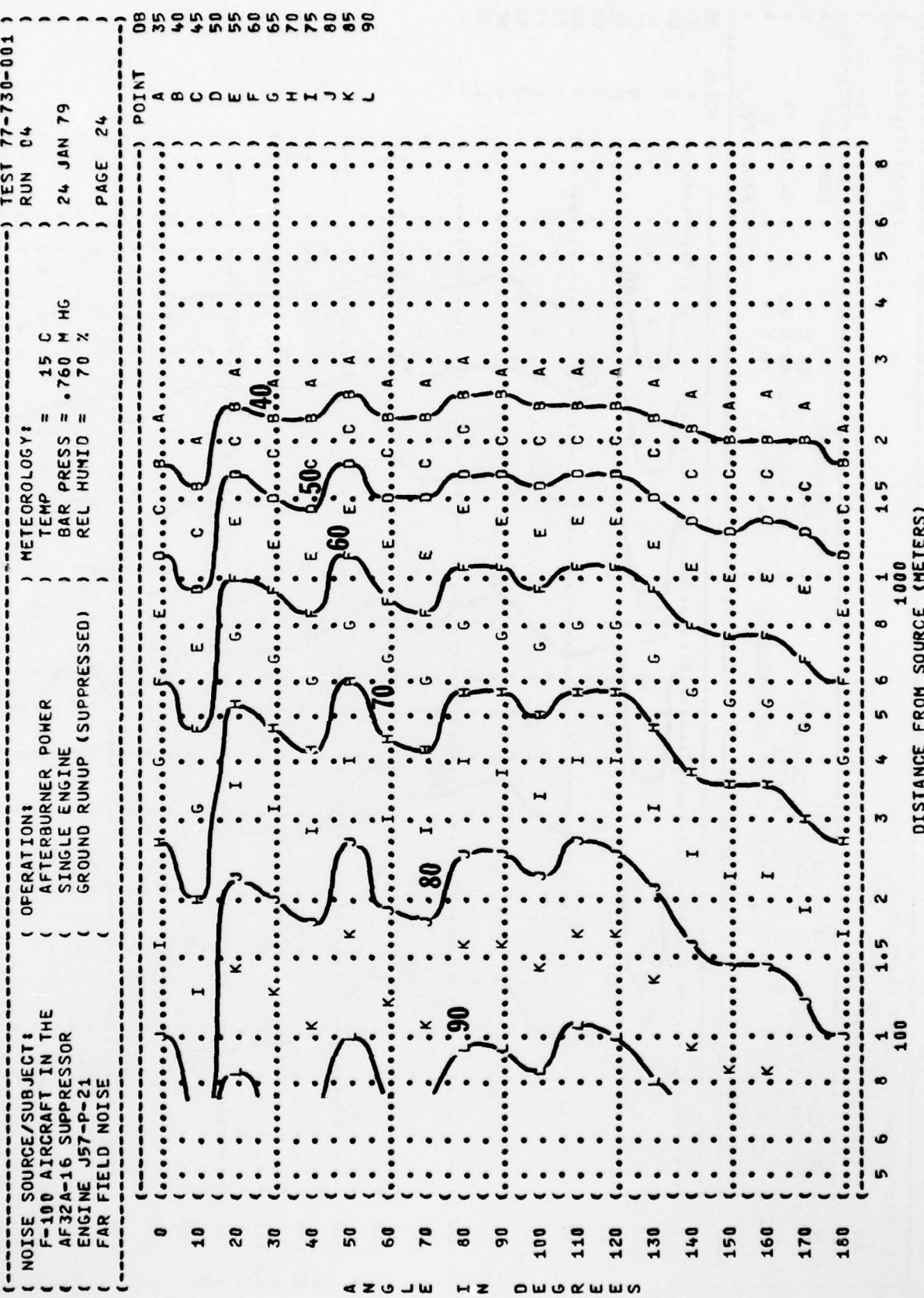


FIGURE 1 SOUND PRESSURE LEVEL (SPL)  
**10** EQUAL LEVEL CONTOURS (dB)  
 4000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:  
 F-100 AIRCRAFT IN THE  
 AF 32A-16 SUPPRESSOR  
 ENGINE J57-P-21  
 FAR FIELD NOISE

OPERATIONS  
 AFTERBURNER POWER  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

IDENTIFICATION:  
 OMEGA 104  
 TEST 77-730-001  
 RUN 04  
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METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

